



# **INTERNATIONAL CONFERENCE ON OCCUPATIONAL HEALTH**

**A GOLDEN JUBILEE EVENT OF  
INDIAN ASSOCIATION OF OCCUPATIONAL HEALTH  
IN COLLABORATION WITH  
INTERNATIONAL COMMISSION ON OCCUPATIONAL HEALTH**

**5th-8th February 1998**

**Theme  
OCCUPATIONAL HEALTH IN DEVELOPING  
COUNTRIES - PROBLEMS AND SOLUTIONS**

**SCIENTIFIC PROGRAM  
AND  
BOOK OF ABSTRACTS**



05791

**COMMUNITY HEALTH CELL**

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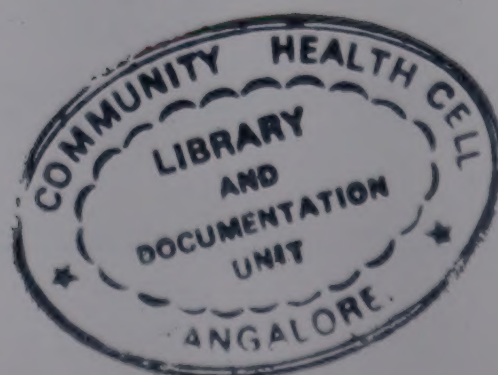
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## Message from Chairman Scientific Committee



Dear Delegates,

It gives me immense pleasure in welcoming you to this International Conference on Occupational Health, held in collaboration with the International Commission on Occupational Health. The conference, which is a Golden Jubilee event of the Indian Association of Occupational Health has as its theme, the important aspect of "Occupational Health in Developing Countries - Problems and Solutions"

The scientific committee has spared no efforts in roping in national and international experts to lead the deliberations through various keynote addresses, scientific symposia as well as technical papers covering various aspects of Occupational Health. Occupational Health related issues like technology transfer, accident prevention, risk assessment and control, training in occupational health, international collaboration in occupational health practice, occupational health in the unorganised sector, epidemiological applications and the prevention and control of occupational diseases - all form part of the various deliberations during the course of this conference. As a novel agenda we are including an occupational health quiz to encourage post-graduate students in this discipline.

We intend to publish selected papers, orations and keynote addresses in the forthcoming issues of the Indian Journal of Occupational and Environmental Medicine.

I acknowledge with gratitude the help and guidance given by Dr. J. C. Kothari, Dr. R. H. Parekh, Dr. S. Sivaramakrishnan, Dr. S. M. Shanbhag and Dr. G. K. Kulkarni. My co-chairman Dr. S. V. Datar has also contributed immensely in the preparation of this program and I also appreciate the help rendered by Dr. S. Pathare in proof reading all abstracts.

I take this opportunity to wish you active interaction with your peers and national and international experts and on behalf of the scientific committee we hope that you will find this conference intellectually satisfying.

With best wishes,

**DR. T. RAJGOPAL**



# SCIENTIFIC PROGRAMME AT A GLANCE

Date & Time	VENUE AT WORLD TRADE CENTRE			
	Centrum	Vista	Seminar	Sunflower
<b>5th February '98</b> 09.00 a.m. ADM Oration 10.00 a.m. KNA 1 11.00 a.m. KNA 2 12.00 noon KNA 3 01.00 p.m. Lunch 02.30 p.m. UNIDO Presentation 03.15 p.m. Bhansali Oration 04.00 p.m. Tea 04.15-05.30 p.m. Symposium I			Exhibition Hall	Free Papers TS 2
<b>6th February '98</b> 09.00 a.m. CKR Oration 10.00 a.m. KNA 4 11.00 a.m. KNA 5 12.00 noon KNA 6 01.00 p.m. Lunch 02.30 p.m. NIVA Presentation 03.15 p.m. BPT Guest Lecture 04.00 p.m. Tea 04.15-05.30 p.m. Symposium II		Free Papers TS 3	Exhibition Hall	Free Papers TS 4
<b>7th February 1998</b> 09.00 a.m. L & T Oration 10.00 a.m. KNA 7 11.00 a.m. KNA 8 12.00 noon KNA 9 01.00 p.m. Lunch 02.30 p.m. Contemporary Issues 03.15 p.m. Symposium - III 04.00 p.m. Tea 04.15-05.30 p.m. Gogate Symposium		Free papersTS 5	Exhibition Hall	Free papersTS 6
<b>8th February 1998</b> 09.00 a.m. KNA 10 10.00 a.m. KNA 11 11.00 a.m. Occ. Health Quiz 12.30 noon Valedictory function 01.30 p.m. Lunch				

ICOH Scientific Committee on developing countries 5, 6 & 7 FEB. '98: 4.15 - 5.30 P.M. Board room

**Note :** KNA denotes Key Note Address

**Symposium I** - Occupational Asthma

**Symposium II** - Smoking or Health

**Symposium III** - Tuberculosis in Industry

**Gogate Symposium** - Accident Prevention

\*TS 1 JKB Tavaría Memorial session - Selected free papers / guest lectures

For details please refer the Scientific Program and Book of Abstracts

**AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.**



## KEY NOTE SPEAKER



**DR. JEAN-FRANCOIS CAILLARD**

PRESIDENT  
INTERNATIONAL COMMISSION ON OCCUPATIONAL HEALTH

Dr. Jean-Francois Caillard is a French National.

Graduated in Rheumatology, Occupational Medicine, Forensic Medicine, Sports Medicine. He had further Training in Occupational Medicine at the University of Lille (north of France).

Dr. Jean-Francois Caillard is presently Professor in Occupational Medicine and Director of the Institute of Occupational Medicine in the University of Rouen since 1979 and also President of the French Federation of Occupational Medicine 1988-1992.

He is a Member of the Council Superior for Prevention in Occupational Health in the French Ministry of Labour and author of more than 150 scientific publications in the field of Occupational Medicine and is teaching Occupational Medicine in developing countries (Tunisia, Benin, Thailand, Singapore, Vietnam.....)

Dr. Caillard is a Member of the International Commission of OH since 1985, Member of the Board since 1987, Vice-President since September 1990, President since October 1993.

He has been Chairman of the Scientific Committee of the 24th International Congress on Occupational Health in Nice, France, 1993.



## KEY NOTE SPEAKER



**MR. A. LAHIRI**

Mr. Aniruddha Lahiri, 52, is a B.Sc. (Hons) graduate from Calcutta University, and holds a B.Tech. degree in Chemical Engineering from IIT, Madras.

He is currently Director, Human Resource, Corporate Affairs & Technology at Hindustan Lever Ltd. He joined the company in 1976, and has held several positions including Vice President / Detergents - Technical, Head of Agri & Fertiliser Business, General Manager, Eastern Region, Corporate industrial Relations Manager, and General Factory Manager of some of the larger factories of the company. Prior to joining Hindustan Lever, he worked for Standard Alkali for 7 years.

He is also Director of Hindustan Lever's subsidiaries, Hind Lever Chemicals Ltd., Indexport Ltd., Nepal Lever Ltd. and Kalyani Soap Industries Ltd. and Chairman of Sivalik Cellulose Ltd. and Vashisti Detergents Ltd.

He is married with two children, a son and a daughter.



## **KEY NOTE SPEAKER**

**PROF. JERRY JEYARATNAM**

SECRETARY GENERAL OF ICOH

Currently Chairman of Board of Studies of  
Occupational Medicine of National University of Singapore.  
Specialist in Occupational Medicine.

Ex-Prof. & Head of Occupational Medicine Division  
of the Department of Community, Occupational Medicine  
& Family Medicine, National University of Singapore,  
WHO Consultant on Pesticides.



## KEY NOTE SPEAKER



**DR. H. N. SAIYED**

Dr. H.N. Saiyed has been working in the field of Occupational Health since 1976 and has been involved in research in this field.

His scientific and research work has been published in various national and international journals. The discovery of Cardiac Toxicity of methomyl has been his notable contribution to Occupational Health.

Dr. Saiyed's work in the field of Non-Occupational Pneumoconiosis, Silicosis and pesticides has brought him national and international recognition and his work has been quoted extensively in standard text books of Occupational Health.

Presently he is the Director of NIOH (National Institute of Occupational Health) Ahmedabad.



## **KEY NOTE SPEAKER**

### **MR. KAJ ELGSTRAND**

Mr. Kaj Elgstrand was born in 1941 in Sweden. He has a degree in physical education with physiology, anatomy and psychology as main courses from the University of Stockholm.

He has additional studies in social anthropology, statistics and pedagogics. His special interest has been ergonomics. He was the Director of Education and Training at the National Institute of Occupational Health, Stockholm for about 17 years. He has also been the Director of the Nordic Institute for Advanced Training in Occupational Health (NIVA), Helsinki, Finland.

Since 1996, he has been directing the International Training Programme at the National Institute for Working Life in Stockholm, Sweden. Mr. Elgstrand has handled prestigious assignments for ILO, FIDA, SIDA etc.

He has been a member of the International Commission On Occupational Health since 1987. He has edited a Swedish textbook on "Man At Work" and has more than 100 articles and research papers to his credit.



## KEY NOTE SPEAKER



**PROF. BENGT KNAVE**

Prof. Bengt Knave is a Swedish national. Graduated from Karolinska Institute, Stockholm in 1962.

He underwent clinical Training in Neurology and Ophthalmology. Completed Ph.D. dissertation in 1969. He was Associate Professor at National Institute of Occupational Health in 1971 and later became Professor and Head of its Neuromedicine Department, in 1980.

He has been associated with ICOH since 1975, handling various responsible positions. At present he is ICOH Vice President for 1993-2000 and he is the Chairman of the International Committee of the National Institute for Working Life, 1996.

His research and publications cover epidemiological and experimental studies in neurotoxicology, vision ergonomics, work computerization and electromagnetic radiation, and lately also absenteeism, rehabilitation and strategies for implementation of work improvements.



## KEY NOTE SPEAKER



**DR. BART SANGSTER**

A medical degree and specialisation in Internal Medicine and Toxicology took Bart Sangster to the National Institute of Public Health and Environment Protection, and the University Hospital of Utrecht. He became head of the National Poison Control Centre and Professor of clinical toxicology with a special emphasis on the medical aspects of environmental pollution.

Two years as director of microbiology and immunology of the Institute was followed by five years as Director General at the Ministry for Health, Welfare and Sports. With responsibilities stretching from slaughterhouses and children's playgrounds to cost containment, macro economics, quality of care and ethics, his time was spent re-organising the directorate and dealing with a change of government. Dr. Sangster joined Unilever in June 1996.



## KEY NOTE SPEAKER

### MR. T. RAMANAN

Group Controller-Insurance & Risk Management  
Hindustan Lever Ltd, Mumbai

Mr. T. Ramanan is the Group Controller-Risk Management of Hindustan Lever Limited (Unilever Company in India). Mr. T. Ramanan also has an Advisory role on insurance and Risk Management function, on behalf of Unilever Insurance Division, for several countries neighbouring India and South East Asia.

Prior to joining Hindustan Lever Limited, Mr. T. Ramanan worked with a premier Insurance Company in India and abroad.

Mr. T. Ramanan is the Founder President of the Indian Institute of Insurance and Risk Management and at present, he is the Chairman of this Institute. In this capacity, he is also a Director of IFRIMA (International Federation of Risk and Insurance Management Associations) and has been a Vice President of IFRIMA for the year 1992-1994. He was elected as the President of FAPARMO (Federation of African Pacific Asian Risk Management Organisations) for the year 1995-96 and at present, he is the Chairman of this Association.

Mr. T. Ramanan is the First Fellow of the Institute of Risk Management, U.K., in India, and has been awarded an Honorary Membership by AIRMIC of U.K. He is also a Member of the Australian Institute of Risk Management.

Mr. T. Ramanan has presented several Technical Papers on Insurance, Risk Management. He is a Visiting Faculty in Insurance and Risk Management at several Management Institutes in India, such as the Bajaj Institute, National Insurance Academy, College of Insurance and others.

Mr. T. Ramanan is a Member of the Consultative Body for Industry constituted by the General Insurance Corporation of India, representing ASSOCHAM (Associated Chambers of Commerce and Industry). He is also the past Chairman of the Insurance Committee of the Bombay Chamber of Commerce and Industry.

He is also the contact Director of the Institute of Risk Management U.K., being its First Fellow in India. He has, upto now, sponsored 85 students to qualify for these examinations and got for them Scholarship from leading underwriters/brokers, such as J&H Marsh & McLennan, Am-Re Managers, Royal & Sun Alliance of U.K.

He was awarded "The Asia Risk Manager of the Year Award, 1997" at Singapore on 6/10/1997.



## KEY NOTE SPEAKER



**MR. J. R. HOPKINS**  
Vice President-Manufacturing,  
Procter & Gamble India Ltd.

Electrical Engineer by profession, he graduated from the Southern Methodist University in USA in May 1966.

He has worked with the US Air Force and the General Electric Company before joining Procter & Gamble in 1970. Since then he has been working at various plants and the Technical centers of the company in USA before coming to India as the Head of Manufacturing in August 1996.





## **KEY NOTE SPEAKER**

### **DR. SUBHASH HIRA**

Dr. Subhash Hira is a Doctor in Medicine and has done his Master's degree in Public Health from United States of America. He has worked as Professor in Infectious Diseases at the University of Texas, Houston. Currently, he is the Director of AIDS Research & Control Centre (ARCON) at the JJ Hospital, Mumbai. He is also holding the portfolio as the Professor-Director, Department of Infectious Diseases at MGM Medical College, Kamothe, Navi Mumbai.



## DR. K. M. BHANSALI MEMORIAL ORATION



**DR. G. ARJUNDAS**

Dr. G. Arjundas is a renowned Neurologist in India.

He is the past president of Neurological Society of India, Indian Association of Occupational Health and Indian Epilepsy Association.

He is Professor Emeritus at Dr. MGR Medical University & visiting professor at many other Universities in India and abroad.

He is also member of World Federation of Neurology, Neuromuscular Commission & Clinical Neuro Physiology and a Member of board of examiners.

Dr. Arjundas has also participated in research projects conducted by ICMR, Indian Medical Council and other Scientific Bodies. He has also contributed to text books of medicine.

## C. K. RAMCHANDAR MEMORIAL ORATION



**DR. P. K. SISHODIYA**

Dr. P. K. Sishodiya has Graduated from AIIMS, New Delhi and completed his Master's degree in Occupational Hygiene from University of Newcastle-Upon-Tyne, United Kingdom in 1979.

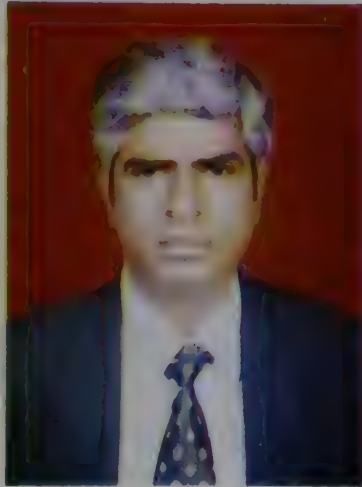
Dr. P. K. Sishodiya's main areas of interest are planning & conducting airborne dust surveys and medical surveillance for pneumoconiosis and other dust diseases.

He is working in the field of Occupational Hygiene since 1979. He is a member of various Scientific Societies and has been a member of many Technical Committees of Government of India.

Dr. P. K. Sishodiya is presently working as Deputy Director of Mines Safety (Occupational Health) in Directorate General of Mines- Safety, Ministry of Labour, Government of India. He is responsible for enforcement of Provisions of Mines Act regarding Occupational Health in Mines.



## L & T ORATION



**DR. G. K. KULKARNI**

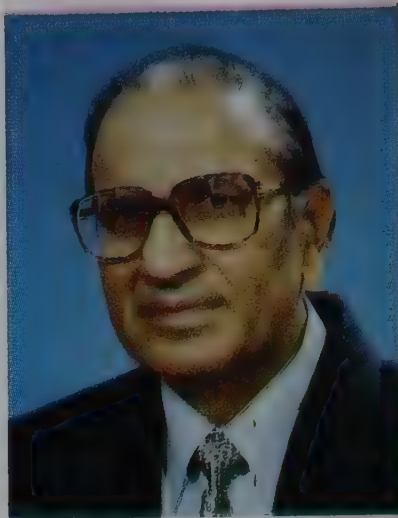
Dr. G. K. Kulkarni has been working in the field of Occupational Health since 1984 and is presently Medical Officer of Siemens Ltd. Mumbai.

He has specialization in TB & Chest Medicine and Industrial Medicine. Dr. Kulkarni has presented more than 30 Scientific papers and has won various Awards.

He has a dynamic personality and has served IAOH Mumbai Branch and All India Body in various capacities. Dr. Kulkarni is member of many professional bodies and has been visiting faculty to National Safety Council, BCCI, TISS and many others.

He has flare for Social Service and is an active Rotarian.

## B.P.T. GUEST LECTURE



**DR. R. C. PANJWANI**

Dr. Panjwani has obtained his MD in Internal Medicine from Bombay University in 1969 & also holds Diploma in Ophthalmology, Dermatology and Industrial Medicine.

He has been an active Member of Indian Association of Occupational Health (IAOH) since 1971. He has been past President of IAOH, Mumbai Branch in 1979 and National President in 1989. He was the Co-chairman of the Scientific Committee for the XII Asian Conference on Occupational Health in 1988, and he has presented over 60 original research papers on subjects related to Occupational Health.

He has received many awards and has also delivered ADM Oration.

He retired as 'Chief Medical Officer' with Larsen & Toubro Limited after a distinguished service of 27 years and is presently working as 'Medical Advisor' in one of the large Groups in Larsen & Toubro Limited.



## ADM ORATION



**DR. S. K. DAVE**

Dr. S. K. Dave is at present Deputy Director and Head of Occupational Medicine & Epidemiology division of National Institute of Occupational Health, Ahmedabad.

After doing his M.D. in General Medicine & Diploma in Occupational Health from Gujarat University, he joined National Institute of Occupational Health.

He has more than 25 years of experience in Occupational Health and Medical Research. He has presented many papers in National & International Conference and has many technical reports and publications to his credit.

He has participated in many research projects conducted by NIOH, ICMR & other Scientific bodies. He is also actively involved in academic education & training in Occupational Health.





**5th FEBRUARY 1998**

**PLENARY SESSION**

**VENUE : CENTRUM**

**OFFICER OF THE DAY : DR. S. V. DATAR**

- 09.00 a.m. Dr. S. K. Dave : ADM ORATION FOR 1998  
Chairman : Dr. S. Sivaramakrishnan  
Co-Chairman : Dr. (Ms.) R. Jyothi
- 10.00 a.m. KEY NOTE ADDRESS 1 SPONSORED BY BHARAT PETROLEUM  
CORP. LTD.  
Prof J. F. Caillard : International Collaboration in Occupational  
Health Practice.  
Chairman : Dr. J. C. Kothari
- 11.00 a.m. KEY NOTE ADDRESS 2 SPONSORED BY IAOH, MUMBAI BRANCH  
Prof. J. Jeyratnam : Transfer of Hazardous Industries -  
Occupational Health Implications.  
Chairman : Dr. R. H. Parekh
- 12.00 noon Mr. A. Lahiri : KEY NOTE ADDRESS 3  
Occupational Health – A Human Resource  
Perspective.  
Chairman : Prof. Bengt Knave
- 02.30 p.m. UNIDO : Occupational Safety and Health Standards  
Dr. J. Hannak : at Work in the Tanning Industry in South  
Dr. G. Jayaraj : East Asia.  
Chairman : Dr. D. K. Sekimpi  
Co-Chairman : Dr. S. Priyolkar
- 03.15 p.m. Dr. G. Arjundas : BHANSALI MEMORIAL ORATION  
Chairman : Dr. T. Rajgopal
- 04.15 p.m. SYMPOSIUM I : SPONSORED BY CIPLA LTD.  
OCCUPATIONAL ASTHMA  
Chairman : Dr. Vivekchandrarao  
Co-Chairman : Dr. R. B. Apte  
Dr. A. A. Mahashur : Aetiopathogenesis of Occupational Asthma  
Dr. Anuradha Shah : Diagnosis of Occupational Asthma  
Dr. Rajan : Management of Occupational Asthma

**AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.**

**5th FEBRUARY 1998**

**DR. JKB TAVARIA SCIENTIFIC SESSION**

**SPONSORED BY IAOH PUNE BRANCH**

**TECHNICAL SESSION 1      VENUE : VISTA      TIME 4.15 - 5.30 P.M.**

**Chairman                      : Dr. Virginia Pascall**  
**Co-Chairman                : Dr. A. G. Harshe**

1. *Physical inactivity as a risk factor for coronary heart disease. A case - control study.*  
— Dr. Sanjay P. Zodpey. Dept. of Preventive and Social Medicine and Clinical Epidemiology Unit, Govt. Medical College, Nagpur, India.
2. *Prevalance of Hypertension and Occupational Stress among the employees of an Aeronautical Industry.*  
— Dr. C. S. Ranga Rao. Hindustan Aeronautics Ltd. Nasik.
3. *Prevalance of risk factors for CHD in Obese and Non-obese executives in a steel industry.*  
— Dr. K. V. Lakshmana Rao. Occupational Health Services, Vishakapatnam Steel Plant.
4. *Prevalance and risk factors of coronary heart disease amongst industrial workers.*  
— Dr. Kerkar Nitish Devdatt. Institute of Safety, Occupational Health and Environment, Goa.
5. *Is Diabetes a taboo for employment ?*  
— Prof. U. Muhammad. Diabetic Association of India, Southern Chapter, Chennai.
6. *Drug prescription pattern among doctors of a public sector undertaking.*  
— Dr. Kushal Mitra. Northern Coalfields Limited, Singrauli.
7. *Modern trends in the management of arthritis - total joint replacement.*  
— Dr. S. S. Vaidya. KEM Hospital, Mumbai.

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**5th FEBRUARY 1998**

**SCIENTIFIC SESSION**

**CO-SPONSORED BY IAOH KARNATAKA BRANCH & MUMBAI BRANCH**

**TECHNICAL SESSION 2 VENUE : SUNFLOWER TIME 4.15 - 5.30 P.M.**

**Chairman : Dr. P. V. Thakkar**  
**Co-Chairman : Dr. M. R. Jape**

1. *Ocular morbidities among steel industry workers.*  
— Dr. R. R. Tiwari. Jawaharlal Nehru Medical College, Wardha.
2. *Analysis of intraocular foreign bodies.*  
— Dr. Praveen K. Nirmalan. Aditya Jyot Eye Hospital, Mumbai.
3. *Health and safety concepts. Comparison between radiological and conventional hazards.*  
— S. Sounderrajan. Bhabha Atomic Research Centre, Mumbai.
4. *Health profile of various categories of male workers in Delhi.*  
— Dr. Jugal Kishore. Centre for Occupational and Environmental Health, Maulana Azad Medical College, New Delhi.
5. *Relevance for color vision for jobs.*  
— Dr. G. Jeyraj. Neyvelli Lignite Corporation Ltd.
6. *Examination of welder's health condition.*  
— Bajcetic Delan. Military Medical Academy, Belegarde, Yugoslavia.
7. *Occupation related musculoskeletal disorders amongst musicians.*  
— Dr. S. Sunder. Chennai
8. *Effect of noise on employees of Oil Refinery with special emphasis on Power plant.*  
— R. C. Saxena. Indian Oil Corporation, Baroda.

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**6th FEBRUARY 1998**

**PLENARY SESSION**

**VENUE : CENTRUM**

**OFFICER OF THE DAY : DR. (Ms.) SUVARNA PATHARE**

- 09.00 a.m.     **Dr. P. K. Sishodiya**     : **CKR ORATION 1998**  
ILO International classification of chest  
radiographs for pneumoconiosis - the use  
and abuse  
**Chairman**     : **Dr. G. Arjundas**  
**Co-Chairman** : **Dr. Sudha Ramachandran**
- 10.00 a.m.     **Mr. John A. Hart**     : **KEY NOTE ADDRESS 4**  
Firing the imagination - to improve safety  
performance  
**Chairman**     : **Dr. D. N. Upasani**
- 11.00 a.m.     **Dr. Usha Desai**     : **KEY NOTE ADDRESS 5**  
Occupational Health in the Atomic Energy sector  
**Chairman**     : **Dr. V. Swaminathan**
- 12.00 noon     **Dr. H. N. Saiyed**     : **KEY NOTE ADDRESS 6**  
Occupational Health in India - Achievements,  
Problems and Perspectives  
**Chairman**     : **Dr. J. Jeyratnam**
- 02.30 p.m.     **Mr. Kaj Elgstrand**     : **Occupational Safety and Health - Training**  
National Institute of     & Development  
Working Life, Sweden  
**Chairman**     : **Dr. S. R. Keshavamurthy**
- 03.15 p.m.     **Mr. R. C. Panjwani**     : **BPT GUEST LECTURE**  
Visual and musculoskeletal fatigue in  
operators using display terminals - a study  
in the Indian context  
**Chairman**     : **Dr. (Mrs.) A. J. Bhatkhande**  
**Co-Chairman** : **Dr. D. V. Lele**
- 04.15 p.m.     **SYMPOSIUM II : CONDUCTED BY NOVARTIS (I)**  
**SMOKING OR HEALTH**  
**Chairman**     : **Dr. J. Kumar**  
**Co-Chairman** : **Dr. R. V. Karanjekar**  
**Dr. Ajit Bhide** : **Addiction and effects**  
**Dr. K. Satish** : **Control strategies**

**6th FEBRUARY 1998**

**SCIENTIFIC SESSION**

**SPONSORED BY OCCUPATIONAL HEALTH  
SERVICES FOUNDATION (OHSF)**

**TECHNICAL SESSION 3**

**VENUE : VISTA**

**TIME 4.15 - 5.30 P.M.**

**Chairman : Dr. N. A. Shah**

**Co-Chairman : Dr. Al - Shatti**

1. *Respiratory symptoms and ventilatory capacity in metal polishers.*  
— Tanveer Hussain. Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow.
2. *Comparing health status of Delhi Fire Services' (DFS) workers and village population.*  
— Dr. T. K. Joshi. Centre for Occupational and Environmental Health, Maulana Azad Medical College, New Delhi.
3. *A study on decompression sickness among the workers engaged in tunnel construction (under hyperbaric condition) in metro railway, Calcutta.*  
— Dr. Sushanta Kumar Das. All India Institute of Public Health. Calcutta.
4. *Health status of N.C.L. employees. A PME study.*  
— Dr. N. De. Northern Coalfields Limited.
5. *Cutaneous manifestations among exposed workers to metallic dusts in sintering technology.*  
— Stoica Ligia. Institute of Public Health. Cluj-Napoca, Romania.
6. *Post retirement health cards - A surveillance and follow up tool.*  
— Dr. Suvarna Pathare, Mumbai.
7. *Study of Morbidity pattern among the workers in a CCL hospital.*  
— Pratima Das. Gandhinagar hospital, Ranchi.

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**6th FEBRUARY 1998**

**SCIENTIFIC SESSION**

**SPONSORED BY OCCUPATIONAL HEALTH  
SOCIETY FOUNDATION (OHSF)**

**TECHNICAL SESSION 4 VENUE : SUNFLOWER TIME 4.15 - 5.30 P.M.**

**Chairman : Dr. Y. Parihar**  
**Co-Chairman : Dr. V. J. Ruparel**

1. *Morbidity profile of workers in a sugar industry.*  
— Dr. Vijay S. Patil. D. Y. Patil Medical College, Kolhapur.
2. *Worker's health problems - A global strategy for assessment of Occupational Health risk factors in employees at Defense Research Development Establishments in India.*  
— Dr. S. S. Bhutada. Dr. Ramazinni Research Institute of Occupational Health Services, Pune.
3. *Study of respiratory morbidity among residents of atomic power station colony, Tarapur and a village population.*  
— Dr. R. Rajesh. Silvassa Industries Pvt. Ltd., Silvassa.
4. *Health hazards due to plastic recycling.*  
— Vasundhara M. K. Dr. B. R. Ambedkar Medical College, Bangalore.
5. *Work related food poisoning of powerloom workers of Bhiwandi.*  
— Dr. Achala S. Daga. Grant Medical College, Mumbai.
6. *Working risks in Sugar industries.*  
— Aurora Perez. Universidad Central Las Villas, Cuba.
7. *Occupational Hygiene in India - Problems and Solutions.*  
— D. J. Parikh, Ahmedabad
8. *The Politics of Environmental Protection and emergence of environmental and occupational health education.*  
— Jayashri Devi Sharma. Jawaharlal Nehru University, New Delhi.

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# 7th FEBRUARY 1998

## PLENARY SESSION

VENUE : CENTRUM

OFFICER OF THE DAY : DR. C. S. GULVADY

- 09.00 a.m. Dr. G. K. Kulkarni : L & T ORATION 1998  
: Occupational Health Services - A Key Element  
in Enhancing Productivity  
Chairman : Dr. K. J. Kamat
- 10.00 a.m. KEY NOTE ADDRESS 7  
SPONSORED BY BHARAT PETROLEUM CORP. LTD.  
Dr. Bengt Knave : The good working life-from perspectives of labour  
market, work organisation and work environment  
Chairman : Dr. H. N. Saiyed
- 11.00 a.m. Dr. Bart Sangster : KEY NOTE ADDRESS 8  
A multinational perspective on management  
of Occupational Health, Safety and Environment  
Chairman : Prof. Jean - Francois Caillard
- 12.00 noon Dr. S. P. Agarwal : KEY NOTE ADDRESS 9  
Government / Ministry support for Occupational Health  
Chairman : Dr. T. K. Joshi
- 02.30 p.m. SESSION ON CONTEMPORARY ISSUES  
SPONSORED BY SHANTA BIOTECHNICH  
T. Ramanan : Risk assessment in Health care Industry  
Prof. Philip Abraham & Dr. Sethu Babu : Update on Hepatitis B  
Chairman : Dr. M. R. Bhatt Co-Chairman : Dr. S. Chatterjee
- 03.15 p.m. SYMPOSIUM III  
SPONSORED BY MAHARASHTRA STATE ANTI T.B. ASSOCIATION  
TUBERCULOSIS IN INDUSTRY  
Speakers : Dr. G. D. Gothi, Dr. J. C. Kothari  
: Dr. Alka Deshpande, Mrs. Jyoti Subhedar  
Chairman : Dr. B. Bhar Co-Chairman : Dr. D. T. Jadhav
- 04.15 p.m. GOGATE SYMPOSIUM SPONSORED BY SIEMENS LIMITED  
ACCIDENT PREVENTION  
Speakers : Dr. M. Thyaga Raju, Mr. B. L. Sharma, Dr. Al-Shatti  
Dr. Arvind V. Carpenter, Dr. Haresh I. Shah,  
Dr. Imari Kaori, Dr. Sonali Shirsat  
Chairman : Dr. Bart Sangster Co-Chairman : Dr. G. G. Davay

7th FEBRUARY 1998

GOGATE SYMPOSIUM

VENUE : CENTRUM

Time : 4.15 - 5.30 p.m.

Chairman : Dr. Bart Sangster  
Co-Chairman : Dr. G. G. Davay

1. *Accident and safety management strategies.*  
— Dr. M. Thyaga Raju. Bharat Electronics Ltd. Bangalore.
2. *A safety technique that paid for industrial accident prevention.*  
— B. L. Sharma. Tata Iron and Steel Co. Ltd. Adityapur.
3. *Health surveillance program at Chemical Manufacturing Company.*  
— Arvind V. Carpenter, Rohm and Hass, USA.
4. *Epidemiology of hospitalised Industrial Burns in Ankleshwar.*  
— Dr. Haresh I. Shah. Smt. Jayaben Mody Hospital, Ankleshwar.
5. *Spinal cord injury caused by industrial accidents in Japan.*  
— Imari Kaori. Okayama University, Okayama, Japan.
6. *Measurement of Health Impact of wars, The case of Kuwait.*  
— Al-Shatti. Kuwait.
7. *Epidemiology of Vehicular accidents.*  
— Sonali Shirsat. LTMG Hospital, Sion.

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**7th FEBRUARY 1998**

**SCIENTIFIC SESSION**

**SPONSORED BY OHMEDA**

**TECHNICAL SESSION 5**

**VENUE : VISTA**

**TIME 4.15 - 5.30 P.M.**

**Chairman : Dr. V. P. Pathak**  
**Co-Chairman : Dr. Pradeep Padwal**

1. *Study of knowledge, attitude and practice regarding occupational health among medical officers of West Bengal ESI (MB) scheme.*  
— S. K. Pal. Dept. of Occupational Health, All India Institute of Hygiene and Public Health, Calcutta.
2. *Cotton dust exposure and health status of Indian ginning workers.*  
— Dr. J. R. Parikh. National Institute of Occupational Health, Ahmedabad.
3. *Work and Depression. A study of nurses in Trinidad.*  
— Vishwanath V. Baba. Department of Management, Concordia University, Montreal, Canada.
4. *Child Labour in India. Problems and solutions.*  
— Dr. Manisha M. Ruikar. NOCIL, Thane.
5. *Mutagenic response of smoke particulates of biomass energy fuels.*  
— V. N. Gokani. National Institute of Occupational Health, Ahmedabad.
6. *Carcinogenesis at work place. Exposure and risk of Cancer.*  
— Snehal Damle. Department of Oncology, Albert Einstein Cancer Center, New York.
7. *Occupational exposure to H<sub>2</sub>S toxicity in Oil exploration.*  
— A. C. Kulkarni, Mumbai.

**AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.**

**7th FEBRUARY 1998**

**SCIENTIFIC SESSION**

**SPONSORED BY LIFEBOUY**

**TECHNICAL SESSION 6    VENUE : SUNFLOWER    TIME 4.15 - 5.30 P.M.**

**Chairman                    : Dr. P. K. Biswas**  
**Co-Chairman               : Dr. Chandru Sadarangani**

1. *Ergonomics in backache prevention.*  
— Dr. M. C. Dutta. Nuclear Fuel Complex, Hyderabad.
2. *Neuropsychological assessment of toxic exposure in industry.*  
— K. Vijayan. Institute of Health Sciences, Chennai.
3. *Action oriented pilot research study aimed at developing a model strategy to provide occupational and general health services to stone crushers and cutters employed in unorganised sector of the industry.*  
— Dr. V. P. Joshi. Lokmanya Medical Research Centre, Lokmanya Hospital, Pune.
4. *Clinical diagnosis versus results of biological examination in respect of inorganic lead intoxication among exposed workers - findings of periodical examination between 1989-97.*  
— Dr. Barun Kumar Sikdar. Factories Inspectorate, West Bengal.
5. *Implementation of the pre-employment and periodic medical examination (PME) of persons employed in mines - chapter IV-A of the Mines Rules - 1955.*  
— Dr. G. Jeyraj. Neyvelli Lignite Ltd.
6. *Characterisation and evaluation of airborne dust associated with the mining operations.*  
— D. K. Ghosh. Bhabha Atomic Research Centre, Trombay, Mumbai
7. *Assessment of Occupational Exposure through biological monitoring.*  
— C. B. Pandya, NIOH, Ahmedabad.

**AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.**



8th FEBRUARY 1998

## PLENARY SESSION

**VENUE : CENTRUM**

**OFFICER OF THE DAY : DR. (Ms.) MANISHA RUIKAR**

09.00 a.m.	Mr. Hopkins J. R.	: KEY NOTE ADDRESS 10 Contribution of Occupational Health Programme to the success of business — A Business Manager's perspective
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**Chairman : Dr. S. M. Shanbhag**

**10.00 a.m.**      **Dr. Subhas Hira**                : **KEY NOTE ADDRESS 11**  
HIV / AIDS prevention at the work place

**Chairman : Dr. A. N. Dandekar**

11.00 a.m.      **Dr. J. Kumar**                      : Occupational Health Quiz

12.30 p.m. : Valedictory function

AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.

## RECEIVED ABSTRACTS FOR THE SCIENTIFIC SESSIONS

Title of the presentation	TS Number	Name	Institution
1. Work & depression - study in Nurses	TS 5	VV Baba	Concordia University, Canada
2. OH risk factors in DRDO establishment	TS 4	Bhutada SS	571 Shukravar Peth, Pune 411002
3. Health Surveillance program at a chemical manufacturing company	Gogate Symposium	Arvind V. Carpenter	Rohm and Hass, Bristol, USA.
4. Work related food poisoning of powerloom workers in Bhiwandi	TS 4	Achala S. Daga	Dept. of Prev. Med. GMC, Mumbai
5. Carcinogenesis at work place	TS 5	S. Damle	Dept. of Oncology, New York
6. Study of morbidity pattern in coalfields	TS 3	Pratima Das	Coalfields, Ranchi
7. Decompression sickness - Metro Rail, Calcutta	TS 3	SK Das	AIIPHH, Calcutta 700 073
8. NCL employees - Health status - PME	TS 3	Nandini De	Nehru Shatabdi Chikitsalaya, Jayant
9. Welder's health	TS 2	Baisetic Dejan	Belgrade Yugoslavia Fax 381 11666164
10. Ergonomics in backache prevention	TS 6	M C Dutta	NFC, Hyderabad 500 062
11. Characterisation and evaluation of airborne dust-mining	TS 6	D K Ghose	BARC, Trombay, 400 095
12. Mutagenic response to smoke particulates	TS 5	Gokani VN	NIOH, Ahmedabad
13. Resp. sympt. in metal polishers	TS 3	Tanweer Hussain	SG institute of Med. Sci. Lucknow 226 014
14. Industrial accidents in Japan	Gogate Symposium	Kaori Imai	Okayama University, Japan
15. Relevance of colour vision of jobs	TS 2	G. Jeyraj	CMO, NLC
16. Mines - implementation of PMEs	TS 6	G. Jeyraj	CMO, NLC
17. Comparing health status of Delhi Fire service workers and village population	TS 3	T K Joshi	B22 New Krishna Park, New Delhi 110 018
18. CHD risk factors amongst industrial workers	TS 1	N D Kerkar	Kerker Hospital, Aqueem, Margao - Gao 403 601

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Title of the presentation	TS Number	Name	Institution
19. Male workers health profile in Delhi	TS 2	Jugal Kishore	B22 New Krishna Park, New Delhi 110 018
20. Oil exploration - H <sub>2</sub> S toxicity	TS 5	A C Kulkarni	Mumbai
21. Epidemiology of Vehicular Accidents	Gogate Symposium	A G Kulkarni	LTMG Hospital, Sion
22. Drug prescription pattern in Public sector	TS 1	Mitra Kushal	Nehru Shatabdi Chikitsalaya, Jayant Sidhi MP 486890
23. Risk factors for CHD in obese/ non-obese in a steel indu.	TS 1	K V Lakshman Rao	OHSRC, Vishakapatnam Steel Plant 530 031
24. Cutaneous manif. to metallic dust in sintering	TS 3	Stoica Ligia	Institute of Public Health, 3400, Cluj-Napoca. Romania
25. Is Diabetes a taboo for employment	TS 1	U. Muhammad	Residence, Baitul Hund, 10 Zacharia Avenue, Madras 600 008
26. Intraocular foreign bodies - analysis	TS 2	P K Nirmalan	Aditya Jyot Eye Hospital, Mumbai 400 014
27. KAP regarding OH in ESI Bengal	TS 5	SK Pal	c/o R N Chaudhuri, Head of OH, AIIPHH, 110 Chittaranjan Avenue, Calcutta 700 073
28. Occupational exposure - biological mon.	TS 6	C B Pandya	NIOH, Ahmedabad
29. Occupational hygiene in India	TS 4	D J Parikh	NIOH, Ahmedabad
30. Cotton dust exposure - ginning workers	TS 5	J R Parikh	NIOH, Ahmedabad
31. Post retiral health cards	TS 3	S Pathare	HLL, Mumbai
32. Morbidity in sugar factory	TS 4	Vijay Patil	DY. Patil Med. College, Kolhapur
33. Working risks in sugar industries	TS 4	Aurora Pirez	Universidad, Cenral Las Villas, Santa Clara 54830, Villa Clara, Cuba.
34. Hypertension & Stress - Aeronautical Indu.	TS 1	CS Ranga Rao	Hindustan Aeronautics Ltd. Ojhar, Nasik 422 207
35. Resp. Morbidity in atomic power station and a village population	TS 4	R. Rajesh	Silvassa Industr. 342 Kharadpada, Naroli, D & N, 396 235

**AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.**

Title of the presentation	TS Number	Name	Institution
36. Health hazards in plasma torch cutting	TS 3	A Raju	BARC, Trombay, Mumbai 400 095
37. Child labour in India	TS 5	Ruikar M	Medical officer, NOCIL
38. Noise - Oil Refinery	TS 2	Saxena R C	IOC, Vadodra
39. Industrial burns epidemiology	Gogate Symposium	Haresh Shah	Jayaben Mody Hospital, Ankleshwar
40. Safety technique that paid for acc. prevn.	Gogate Symposium	BL Sharma	TISCO Jamshedpur, 831 001
41. Politics of Environmental Protection	TS 4	Sharma Jayashri	JNU, New Delhi
42. Kuwait - health impact of war	Gogate Symposium	Al- Shatti	OH Dept. Kuwait
43. Periodical examination - Lead workers	TS 6	BK Sikdar	Fact. Inspector, West Bengal
44. HSE concepts - Comp. Radiol. & Conv. haz.	TS 2	S Sounderrajan	BARC, Trombay, Mumbai 400 095
45. Musculoskeletal Disorder - musicians	TS 2	S. Sunder	Prem centre, Madras
46. Accident and safety management strategies	Gogate Symposium	M Thyaga Raju	BEL Hospital, Jalahalli, Bangalore 560 013
47. Ocular morbidities in steel industry	TS 2	Tiwari RR	JN Med. college, Sawangi (Meghe), Wardha
48. Management of Arthritis	TS 1	Vaidya S V	KEM, Mumbai
49. OHS to stone crushers in unorganised sector - Model strategy	TS 6	VG Vaidya	Lokmanaya Hospitals Chinchwad Pune 19.
50. Health hazards due to plastic recycling	TS 4	Vasundhara MK	Ambedkar Medical College, Bangalore
51. Neuropsychological assessment in Industry	TS 6	K. Vijayan	Inst. of Health Sc. Chennai.
52. Physical inactivity - CHD Case control study	TS 1	Sanjay Zodpey	PSM Dpt. Govt, Medical College, Nagpur

**AUDIO - VISUALS SPONSORED BY RELIANCE INDUSTRIES LTD.**



# ABSTRACTS





# **Occupational Hygiene in India — Problems and Solutions**

Parikh DJ, Saiyed HN

*National Institute of Occupational Health, Meghaninagar, Ahmedabad 380 016*

In India, Occupational Hygiene practice as part of Occupational Safety and Health programmes in industry unfortunately, has been considered a low priority or neglected discipline, in the control of harmful agents and elimination of a risk in the work environment of an industry. On the other hand, a fairly large number of potentially hazardous chemicals or substances are introduced in the day-to-day activities of the industry which may produce a health risk and which may ultimately lead to catastrophic accidents like the MIC tragedy in Bhopal. Therefore, protection and improvement of industrial environment through occupational hygiene practice is essential. In this paper an attempt has been made to describe the occupational hygiene problems and to suggest practical solutions which will cater to the implementation of better occupational health services in industry. This would help in creating a safe, healthy and comfortable environment for work and living thereby, increasing the productivity in any industry.

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## **Occupation Related Musculoskeletal Disorders Among Musicians**

Sunder S

*Prem Centre for Physiotherapy and Rehabilitation Medicine, Flat 9, Block D1, Anand Apartments, 50, L.B. Road, Thiruvannamipur, Chennai 600 041.*

### **Introduction :**

There is a reported high incidence of Musculo Skeletal Disorders among approximately 50% of instrumentalists. Many of these are directly related to their occupations. Common disorders include Carpal Tunnel Syndrome, DeQuervain's Tenosynovitis and Myo-fascial Pain Syndromes. Several musicians suffer from backache and neck pain due to incorrect postures and poor technique. The cause of such damage could be ergonomic, poor technique of playing, static holding contraction and vagaries of instrument related design.

### **Objectives :**

To evaluate the factors influencing the problem: how great is the demand on muscular activity, how often and how long does a musician play in a day, conditions which would lead to overuse injury. The results would be based on questionnaire sent to the patients and evaluation of patients visiting the centre.

### **Conclusion :**

Many musicians who visit the centre for various Musculo Skeletal Disorders could get relief from Physiotherapeutic Line of management with correction of posture and relaxation techniques.



# **Carcinogenesis at Work Place: Exposure and Risk of Cancer**

Damle Snehal

*Department of Oncology, Montefiore Medical Centre and Albert Einstein Cancer Centre, New York, USA.*

Exposures to hazardous chemicals that occur in workplace may cause cancer. Conversely, no workplace exposure has been shown conclusively not to be associated with an increased risk of cancer as per International Agency for Research Against Cancer (IARC), 1987.

Occupation related cancers make up only 2-8% of all human cancers. But they contribute greatly to the knowledge of an epidemiologist. Reason being, workplace becomes a focal point where large numbers of people may be exposed to high concentrations of hazardous chemicals. Also they help to establish a cause-effect relationship between environmental carcinogen and cancer. Such relationships are important to be identified as they could largely be prevented through appropriate engineering and personnel practices and governmental legislation.

There are about 6 million chemicals identified and registered with Chemical Abstract Services, but less than a thousand have been scrutinized as to their potential for cancer causation. IARC to date has methodically identified and published 61 volumes of monographs identifying 782 agents, classifying them under categories where sufficient, limited or inadequate evidence of carcinogenicity exists. Identification and elimination of an occupational cause of cancer would potentially have a major impact on public health. Surveillance studies have identified 5 high priority groups for study - asbestos workers, motor vehicle drivers, machinists, electricians and metal moulders.

There are reports suggesting a link between parental occupational exposure and risk of cancer in the offspring. However the small size of the study and lack of independent assessment of completeness of record linkage limit the inference drawn from the studies. Most studies on this subject are case control studies or retrospective cohort studies.

The pressing need that faces today as an occupational epidemiologist is to establish prospective cohort studies. Type of exposure and actual measurement of level must be prospectively followed for each worker to establish patterns of morbidity and mortality.

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## **Occupational Exposure to H<sub>2</sub>S toxicity in Oil Exploration**

Kulkarni AC

*Bldg 57/2600, Gandhi Nagar, Bandra (E), Mumbai 400 051*

In nature, Hydrogen sulphide (H<sub>2</sub>S) occurs as the degradation product of sulphur containing proteins by anaerobic bacteria. Hydrogen sulphide is a highly toxic gas that is often released during drilling operations. Crude oil obtained from such wells contains Hydrogen sulphide dissolved in it which may appear at various stages during transportation and refining.

*(Contd.)*



Hydrogen sulphide smells strongly of rotten eggs, but the sense of smell adapts quickly and after a while disappears completely. H<sub>2</sub>S is very toxic even in small quantities and great care needs to be taken to avoid exposure to it. TLV of H<sub>2</sub>S is 10 ppm and exposure to more than 700 ppm would produce instantaneous death.

Personnel working on the drill floor need to be constantly alert to escaping gas. They also need to be proficient in the use of various personal protective and rescue equipment that are available for use.

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## **Measurement of Health Impact of Wars, The Case of Kuwait**

Al-Shatti Ahmad KS and El-Desouki Mustafa

*Occupational Health Department, Ministry of Health, Kuwait*

### **Introduction :**

The Occupation and Liberation of Kuwait is the latest major conventional war in the twentieth century. The implications on health and environment are often far reaching. There is an ongoing need to measure such impact and public health sequel 7 years after the war. The factors that affect measuring the impact (quantitatively and qualitatively) include population demography, environmental and geographical features of Kuwait, state of exposure, dosage, duration, baseline saved data .....etc.

### **Objectives :**

To address the changes in mortality patterns and impact on life expectancy; demonstrate the increased incidence and morbidity patterns after the war and quantify the health impacts using the Disability Adjusted life years (DALYs) and Years Lived with Disability (YLDs).

### **Methods :**

All vital statistical data (mortality and morbidity) about hospital discharges were analyzed. The resulting disability was computed using GBD methodology elaborated by WHO. The YLDs were converted to years of life lost.

### **Results :**

13,545 cases before occupation (1987-1989) were compared to 19,309 cases of reported mortality 5 years after occupation (1991-1995). The crude mortality rate of the total population after the invasion showed a substantial (8.1%) mean elevation; traumatic injuries, psychiatric, respiratory diseases, problems, cardiovascular diseases and complications, associated with pregnancy and, purpura are the diseases which showed a higher incidence post-invasion. Totally 98,268 discounted YLDs were found out.

### **Conclusion :**

There is an increased mortality and decrease in life expectancy among Kuwaitis after the invasion. Psychiatric problems followed by pregnancy complications and trauma are major contributors to the resulting health disability.

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# **Assessment of Occupational Exposure Through Biological Monitoring**

Pandya CB, Sathawara NG, Shah GM, and Parikh DJ

*NIOH, Meghaninagar, Ahmedabad.*

The concept of Biological Monitoring (BM) is rather new in our country, but it is well recognized since 1980 in developed countries. In addition to ambient Air Monitoring (AM) at work places and/or Environmental Monitoring (EM) in the community, BM provides first hand information on the extent of exposure and health detriments. BM is possible for few substances, as knowledge is limited for certain criteria needed for it.

The National Institute of Occupational Health (NIOH), Ahmedabad could be the first in the country which has incorporated the aspect of BM in many of the studies in the field of human exposure to varied pollutants.

In this paper, criteria for BM, possible biological monitoring systems developed so far as well as further research needed in this area etc. have been discussed. Results of the studies particularly, assessment of human exposure to lead through biological monitoring are discussed in the paper.

Our experiences, so far in biological monitoring programmes, suggest that it could be included in occupational exposure studies wherever it is possible.

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## **Epidemiology of Vehicular Accidents**

Shirsat Sonali, Kulkarni AG

*L.T.M.G. Hospital, Sion Mumbai 400 022.*

A retrospective study of 881 cases of vehicular accidents which had reported to L.T.M.G. Hospital, Sion from 1st Jan to 31st March 1994 was carried out. The objective of the study was to find out the epidemiological profile of road accidents and accident victims reporting to the Casualty department of L.T.M.G. Hospital.

The data was collected from the casualty register of medical record office of L.T.M.G. Hospital for a period of three months. The nature of vehicular accident, the type of vehicle involved, the characteristics of the individuals involved etc. were studied.

It was found that the risk of vehicular accidents was higher in the age group 20 to 40 years. Males were commonly involved than females. Highest accident rate was between 4 pm to 8 pm. Heavy motor vehicles were more commonly involved than light motor vehicles. The injuries involving lower limbs were more than any other part of the body. Mortality was more common below 30 years of age. Maximum number of admissions were for less than 15 days.

Certain areas were found to be more accident prone. Education of the public and vehicle drivers and restrictions and strict implementation of the load limits carried by heavy vehicles were essential to reduce the vehicular accidents.



# **The Politics of Environmental Protection, and Emergence of Environmental and Occupational Health Education**

Sharma Jayashri Devi

*Medical Ecology,*

*Environmental and Occupational Health School of Environmental Sciences*

*Jawaharlal Nehru University, New Delhi 110 067*

Varied policy changes, and economic priorities have resulted in the ever-increasing exploitation of the living and non living resources, which are being indiscriminately replaced by wasteful materials. The resulting asymmetric interdependence between ecosystem balance, market forces and individual life styles are reflected in workplace situations at an increasing cost to environmental protection, environmental sciences and particularly, to Occupational Health.

In order to re-establish realistic and relevant linkages for globalisation, describing the role of Occupational Medicine and Health, is an attempt to better environmental and ecosystem protection. The dichotomies of manifold environmental priorities in esoteric terms of save the planet-earth, including climate change, ozone depletion, and particularly, energy policies are discussed for the intergenerational sustainable development of the less developed countries and the Occupational Health of their people and the need for professionalisation of environmental protection emphasised. The attempts so far and the further basis for good and suitable syllabi for teaching programmes in university medical and environmental education have been described. After twenty-five odd years of major environmental political changes, and tentative dealings with environmental problem-defining and solving there is a need for lesser politicization of environmental sciences, and a greater institutionalised environmental protection with vigilant environmental governance.

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## **Accident and Safety Management Strategies**

Thyaga Raju M

*BEL Hospital, Bangalore 560 013*

### **Incidence :**

In this paper the accident and safety management strategies have been discussed. The accidents have been classified into road, farm, industrial, domestic and rail and air accidents.

About 500 patients who had sustained various types of injuries in different accidents and who were admitted to the BEL Hospital between January 1985 to January 96 were studied.

Most of the people who were involved in these accidents are in the prime of their lives and their disability is of great importance since it affects the dependency ratio of the population. These accident cases have been categorised depending upon the severity of their injuries and appropriate recommendations for the adequate treatment and further prevention of the occurrence of these injuries have been suggested.

# **Neuropsychological Assessment of Toxic Exposure in Industry**

Vijayan K

*Deptt. Of Human Development Sciences*

*Subbulashmy Raghavan Institute of Health Sciences, Chennai.*

## **Introduction :**

Exposure to industrial toxins often produces effects on cerebral structure and functions, which is the cause for developing behavioural and neurological syndromes. Neurological dysfunction was noted among industrial workers who are exposed to metals like lead, mercury, arsenic, manganese, solvents like carbon disulfide, trichloroethylene, toluene, perchloroethylene, and insecticides like chlordane.

## **Purpose :**

To create an awareness on different neuropsychological assessment procedures for the population exposed to toxic substances in industry.

## **Neuropsychological testing :**

Neuropsychological testing is one of the important methods of assessment to detect the effects of toxins at an early stage.

Neuropsychological testing offers reliable standardized procedures for objectively evaluating specific aspects of change in the behaviour. There are specific standardized rules for administering these tests. Results may be analysed objectively. In addition, reliability and validity of the tests have been established.

Batteries of tests may be designed for clinical diagnosis of individual patients as well as for screening large groups of hazard exposed subjects. The areas assessed by these tests include intelligent attention, short term memory, visuospatial skills, reasoning, motor abilities, language skills, long term memory, mood etc.

## **Conclusion :**

Appropriate neuropsychological tests can be selected which are very sensitive to specific neurotoxicant exposure.

This paper gives an introduction about Neuropsychological assessment.



# **Effect of Noise on Employees of Oil Refinery with Special Emphasis on Power Plant.**

Saxena RC

*Joint CMO, GR Hospital, Baroda.*

A study was carried out to see the effect of noise on 100 employees of Gujarat Refinery in different sections comprising Power plant, LPG, Bitumen and others. Data of all employees reporting to OHC for their routine periodical check up were compared with previous check ups and analysed. Each employee had thorough physical check up, Occupational & family history and had ECG, Lung function test, Titmus vision testing, Audiometry, Complete blood biochemistry. Sound level monitoring was performed in different sections of power plant and was found more than 90 dbA at few places. Among all employees 19% were obese, 27% had high BP, 16% Diabetic, 3% had IHD. Abnormal audiograms were divided into three broad groups - Sensorineural (Presbycusis), Conductive (Otosclerosis), Noise induced deafness. Among all 20% had sensorineural deafness, 4% had conductive deafness and 2% had NHL. Those affected in Power house area were 21% of TPS employees but mainly with sensorineural and conductive deafness only. The results of this present study suggest that regular environmental monitoring, detailed periodical check up and good work hygiene, regular use of ear plugs/muffs should be encouraged since this prevents any occupational disease and detects any deviation at the earliest as we have in our industry.

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## **Modern Trends in Management of Arthritis - Total Joint Replacement**

Vaidya SV, Dholakia Devesh, Mohanty SS, Shah K

*Seth G.S. Medical & K.E.M. Hospital, Parel, Mumbai, India.*

Arthritis especially of weight bearing joints (hip and knee) is the cause of crippling pain in almost 25 to 30% of people more than 40 years. It has got greater significance in Industrial Medicine because heavy manual labourers who lift or operate machines with feet which destroy their joints early because of osteoarthritis. It also causes lack of efficiency and job absenteeism in manual labourers after 40. Arthritis is also common among executives because of lack of exercises, food habits and obesity. However, modern medicine has to offer on its horizon newer avenues of treatment for this crippling disorder which we have been following in our hospital.

This work is a review of modern investigative modalities for early treatment of arthritis (especially hip and knee), newer form of drug therapies (DMRDs) which promise to almost cure rheumatoid disease if diagnosed early (thermography, PET scan etc). If the disease is in an advanced stage of irreparable cartilage damage, joint replacement in these patients offers a dramatic improvement in their life style. In USA alone one to two million artificial replacements of hip and knee joint combined are done in a year.

*(Contd.)*



We are presenting our own series of replacement of joints in weight bearing extremities in 130 cases, done over last 9 years (1989-1998), in patients from as young as 23 yrs to 31 yrs old. We have also done it in difficult situations like ankylosing spondylitis, rheumatoid arthritis with both hip and knee affection etc. The technological advances have made this surgery predictable. People from all walks of life are getting newer lease as far as activity level is concerned. Authors feel this modern trend will offer a lot of improvement in the life style of people working in heavy industries thus improving their efficacy and efficiency.

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## **Study of Morbidity Pattern Among the Workers in a CCL, Hospital**

Das Pratima, Arya R

*Gandhinagar Hospital, Central Coalfields Ltd., Ranchi*

A retrospective study was performed for morbidity pattern in Gandhinagar Hospital from January '96. Among the total admissions, highest number of admissions were in the month of September and October followed by August and there was a rise in OPD attendance during July, August and September. Incidence of respiratory diseases, intestinal diseases, pyrexia, Hypertension was maximum. Age wise distribution of morbidities shows that maximum affected age group is in between 46-50 years followed by 41-45 years and 36-40 years. Occupation wise distribution shows Coal Loader, Dresser, Driller, Trammer were admitted maximum and suffered more from respiratory diseases viz. Asthma. Hypertension was more common among the sedentary worker. Malaria was the cause of most pyrexial diseases. Among the gastrointestinal diseases, gastritis and acid peptic diseases were more among the Coalcutters, Dressers and Trammers. A few guide lines and connective measures have been recommended on the basis of this study.

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## **Post Retirement Health Cards - A Surveillance And Follow-up Tool**

Pathare Suvarna

*Hindustan Lever Limited, Haji Bunder, Sewri, Mumbai 400 015.*

Record linkage has been a well established concept in the developed countries. However in India, the absence of a uniform health record system, even for surveillance purposes creates many irregularities in determining the morbidity profile. Medical records preservation depends entirely upon the individual patient or the physician who treats this patients. There has been a felt need to link the medical records so as to ensure uniform management protocol and avoid the discrepancies which result from lack of case histories. This record linkage should not compromise the confidentiality of the case records or cause a breach of trust.

In our factory we have introduced a system of Post-Retirement Health Cards. These cards contains a brief summary of the individual's morbidity profile during his working life span with appropriate advice for further maintenance of a healthy life style. The card is administered individually at the time of retirement and contains adequate information about the disease/s management. This helps in bringing uniformity in the management protocol and acts as a useful surveillance and follow-up tool for the treating clinicians.



# "Physical Inactivity as a Risk Factor for Coronary Heart Disease (CHD) : A Case-Control Study"

Zodpey Sanjay P, Vasudeo ND, Kulkarni SW

*Dept. of Preventive and Social Medicine and Clinical Epidemiology Unit, Govt. Medical College, Nagpur, INDIA.*

**Objective :** To investigate the role of physical inactivity as a risk factor for development of coronary heart disease.

**Design :** Pair matched case-control study.

**Setting :** Government Medical College, Nagpur, India.

**Participants :** The study included 294 incident cases of CHD diagnosed by standard criteria. Each case was pair-matched with one control for age and sex. Controls were selected from subjects attending study hospital for conditions other than cardiovascular disease.

**Main Outcome Measure :** CHD.

**Study Factor :** The ascertainment of exposure to the risk factor i.e. physical inactivity was done by using the standard criteria.

**Statistical Analysis :** Univariate analysis on matched pairs included odds ratios (OR), their 95% confidence intervals (CI) and McNemar's Chi-square. Conditional logistic regression was also carried out. Attributable risk percent (ARP) and population attributable risk percent (PARP) and their 95% CI were estimated.

**Results :** The significant risk association between light/sedentary physical activity and CHD (OR=8.33, 95% CI=2.51, 27.58) and medium physical activity and CHD (OR=4.09, 95% CI = 2.11, 7.90) was observed. Conditional logistic regression odds ratio between overall physical inactivity and CHD was calculated to be 2.03 (95% CI = 1.56, 2.62). The overall estimates of ARP and PARP were calculated to be 0.50 (95% CI=0.35-0.61) and 0.37 (95% CI=0.24-0.48).

**Conclusion :** The current study identified significant role of physical inactivity in the outcome of CHD.

# Characterisation and Evaluation of Airborne Dust Associated with the Mining Operations

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It has been well recognised since ancient times that inhalation and retention of excessive mineral dust can pose a serious health hazard. In metaliferous mines, mining operations like drilling, mucking and dumping of ore etc are closely associated with the exposure to ubiquitous presence of crystalline silica, commonly known as free silica. The advent and physiological potency to the health of miners arising out from the exposure to fibrogenic crystalline silica dust depends mainly on their particulate size-mass distribution, the nature of dust, their respirable mass concentration and duration of exposure.

This paper presents the results of a study conducted in the characterisation of airborne dust and subsequently in evaluation index of dust exposure according to job classification and outlines the control measures adopted in the mining operations.

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## Ocular Morbidities Among Steel Industry Workers

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**Objective :** To find the prevalence and pattern of ocular morbid conditions among steel industry workers.

**Setting :** Lloyd's Steel Industry, Bhugaon, District Wardha, Maharashtra

**Study Period :** 1st July, 1997 to 15th September, 1997.

**Design :** Cross-sectional study with comparison group.

**Participants :** 103 workers of Lloyd's Steel Industry and equal number of age group matched and sex pair matched comparison group subjects from the neighbourhood, employed in occupations in which there is no exposure to fumes, gases or heat.

**Methods :** Collection of data regarding demographic characteristics and main ocular complaints on the predesigned proforma followed by detailed ophthalmic examination of each study participant by ophthalmologist.

**Results :** Of the 103 study subjects in each group, 98 (95.17) were males and only 5 (4.9%) were females. Mean age of all the study subjects was 31.5 years. The main eye complaints among steel industry workers were watering of eyes, burning sensation in eyes, headache and difficulty in reading from distance. The prevalence of morbid conditions among steel industry workers was 34.9%, with 27 (75%) having refractive error, which included 18 (66.6%) with myopia and 9 (33.3%) with hypermetropia, 2 (5.5%) with presbyopia, 2 (5.5%) with chronic dacryocystitis, 1 (2.7%) each with foreign body in eye, pterygium, pinguecula, chronic conjunctivitis and cataract. The prevalence of eye complaints and ocular morbidity was significantly lower in comparison group.

**Conclusion :** Steel industry workers who are exposed to heat and fumes had significantly higher prevalence of ocular morbid conditions.



# **Prevalence and Risk Factors of Coronary Heart Disease Among Industrial Workers**

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*Institute of Safety, Occupational Health and Environment, Goa-India*

A cross-sectional study was undertaken to determine the prevalence and the associated risk factors of Coronary Heart Disease among workers employed in a major shipbuilding Establishment in Goa. A total of 795 male employees aged 35 years and above were selected by systematic random sampling technique. Clinical examination, Electrocardiogram, serum laboratory investigations like Cholesterol estimation and direct interview were the methods used to collect the data. The data were analysed using Epi-info (Version 6.03). The prevalence was found to be 5.7%. Higher body mass index, tobacco smoking, physical inactivity, growing age, diabetes, elevated cholesterol levels, hypertension, tension at work contributed to higher prevalence of Coronary Heart Disease. The associations were tested for statistical significance.

Coronary Heart Diseases are emerging diseases in the developing countries and call for preventive measures which could be initiated at work place to prevent mortality and morbidity including man-day loss.

## **Prevalence of Hypertension and Occupational Stress Among the Employees of an Aeronautical Industry**

Ranga Rao CS

*HAL, Ozhar, Nasik*

The study was carried out to find out the prevalence of Hypertension and Occupational Stress among the employees of an Aeronautical Industry and to study the relationship between occurrence of Hypertension among its employees and their Occupational Stress.

The employees directly associated with the manufacture of the Aircraft (Subject Group) are compared with the employees working in the supportive departments (Control Group). Except the type of the work, both the groups are similar in all the parameters. The data was collected by taking detailed medical and occupational history, physical examination, laboratory investigations (Haemoglobin, Blood Glucose, Serum Creatinine, Lipid Profile and Urine for Sugar and Albumin) and ECG. The proforma for evaluating occupational stress was based on questionnaire method. The proforma is standardised by Srivastava and Singh (1981). The Occupational Stress Index purports to measure the extent of stress, which employees perceive as arising from various conditions of their job. In order to find out the relation between stress and systolic and diastolic Blood Pressure, a product movement correlation coefficient was carried out. The Occupational Stress was found to be significantly correlated with Systolic and Diastolic Blood Pressure. The Subjects and Control Groups in the present study were found to be different in the experience of Occupational Stress. The study has certain inherent limitations. Therefore, the results are only suggestions and not conclusions. Ruling out the differential influences of the two different sections, a study planned along the same lines involving a larger sample of employees working in different organisations should be carried out.



# **Analysis of intraocular foreign bodies**

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**Objective :** To analyse the epidemiology and outcome of intraocular foreign bodies sustained at the work place.

**Methods :** A retrospective study of 68 cases of intraocular foreign bodies seen at our institute over the past two years was done to assess the epidemiological features as well as the outcome. Results : Intraocular foreign body injury was more common in young males in our series. Surgical intervention with successful removal of the foreign body was done in 58 eyes. Postoperative visual acuity was PL+/HM in 24 eyes, <6/60 in 22 eyes and > 6/60 in 12 eyes. The foreign body was retroocular in 10 eyes, which were not intervened surgically and became phthisical .

**Conclusions :** Intraocular foreign body is a not an uncommon injury sustained in the workplace, affecting the younger age group more and having a significant impact on vision despite surgery. Adequate protective measures have to be employed to reduce the risk of injury.

## **Prevalence of Risk Factors for CHD in Obese and Non-Obese Executives in a Steel Industry**

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*Visakhapatnam Steel Plant*

Obesity has been identified to be an important risk factor for CHD as evidenced by various epidemiological studies. More over, CHD is a multifactorial disease and relative contribution of risk factors is variable from population to population sub groups.

Under a special health surveillance programme, a cross-sectional study was conducted among the executives of Visakhapatnam Steel Plant above 45 years of age during July 1995 to July 1996 wherein 105 executives involved in supervisory and administrative functions were examined. Risk factors like hypertension, diabetes, serum lipid levels were analysed in relation to BMI.

Analysis of data revealed prevalence of obesity to the extent of 48.6% and prevalence of CHD, 11.2%. Prevalence of hypertension between normal and obese groups is found to be highly significant. Serum total cholesterol >200mg/dl and Serum triglycerides > 165 mg/dl showed significant difference between normal and obese groups. Difference in the prevalence of TC/HDL ratio < 3.5 is highly significant between normal and obese groups. The mean fasting blood sugar showed an increase as BMI increased while the spirometric evaluation showed moderate variations with BMI.

The study emphasises the need for a comprehensive nutritional surveillance and an on-going educational programme with thrust on adoption of a "Prudent-diet" and healthy life styles to prevent emergence of risk factors through " self-care" approach.



# **Health Hazards in Plasma Torch Cutting Operations**

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Plasma torch cutting is used to cut stainless steel plates of thickness 12 mm to 25 mm. During the process, intense ultraviolet radiation is produced and high noise levels are encountered. In addition, the gases evolved during the process contain toxic gases such as ozone, oxides of nitrogen and chromium oxide. Surveys have been conducted to assess these hazards and suggest suitable control measures to protect the operators from harmful exposure to these hazards. Although the intensities of ultraviolet radiation and noise emitted during the plasma torch cutting operation are found high, the hazard does not assume any significance as the duration of the operations is limited and the persons wear all the necessary personal protective equipment. The concentrations of ozone, oxides of nitrogen as well as chromium oxide are found to be below the respective Threshold Limit Values in all the cases.

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## **Study on Knowledge, Attitude and Practice Regarding Occupational Health Among Medical Officers of West Bengal ESI (MB) scheme**

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*All India Institute of Hygiene and Public Health, Calcutta*

In spite of rapid industrial and agricultural development in India, it has not been possible to make an impact on provision of occupational health services among working population, perhaps due to lack of correct knowledge, favourable attitude and proper practice in different aspects of occupational health among health personnel.

One hundred medical officers in different categories like GDMOs, SMOs, Insurance Medical Officers, Medical Inspectors and Health Administrators, out of approximately 500 doctors employed in West Bengal ESI Medical Service, were interviewed randomly through questionnaire method with the objective of assessing the level of KAP regarding different aspects of occupational health and also to find out the factors responsible for any altered KAP among them. By allotting one mark for each correct response/answer to the questions (MCQ type), a scoring system was developed to grade the level of KAP among the medical officers.

The study revealed that only 16% of the study population had excellent knowledge, whereas 46% and 38% had good and fair knowledge respectively in different aspects of the discipline.

In general, M.O's having more qualifications and more duration of service in ESI, achieved better than their counterparts. But no such relationship was observed in attitude regarding provision for OHS in different spheres of working environment. About half of the study sample showed excellent attitude and only 8% were of unfavourable attitude. Information regarding different aspects of practice in OH revealed that a very insignificant no. of MOs (4%) had excellent practice score, whereas 36% having good score and majority (60%) were not conversant with practice as ideally required.

It may be concluded that appropriate measures are to be undertaken to increase the knowledge and create favourable attitude so that MOs in ESI (MB) scheme may be well conversant and motivated to treat and prevent occupational disorders successfully.



# **Epidemiology of Hospitalized Industrial Burns in Ankleshwar**

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From a retrospective epidemiological analysis on 172 consecutive industrial burns patients admitted over four years, to a hospital associated with the care of India's largest industrial estates, this paper presents data on the type of burns, site of burns, the cause of the injury and the social status of the victim. Of the total sample, 44% were chemical burns and about 27% were electric burns. Flame burns & scalds were 18% and 11% respectively. The mortality was low. The paper attempts to correlate, the site of burns and their causes and also discuss treatment in a hospital with limited resources and manpower in a developing country. The author argues that many of these cases were preventable.

## **A safety technique that paid for industrial accident prevention**

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The occupational safety and freedom from accidents cannot exist without adequate control of men, machines, materials and methods in use. This control will allow a provision of a working environment in which processes will not be interrupted, equipment will not be damaged and in which people will not be injured.

The occupational accident is an unplanned, uncontrolled, undesirable event caused by the unsafe acts and practices of people and leading to unsafe conditions. The unsafe acts, practices and unsafe conditions result in interruptions to work activity, damage to equipment and injury to persons.

Neither a safe plant nor a safe practice can be obtained or maintained without one very important factor namely, management interest.

No safety technique can be implemented without really vigorous management participation, leadership and providing basic human desire i.e. acceptance, recognition, challenge, security and comfort.

The causes of accidents are identical with the causes of inefficiency and the remedies are similar and may be applied by the same person. Thus, in the work of identifying and eliminating the causes of accidents there is simultaneous improvement of industrial productivity. Often employees are exposed to the danger of crippling or fatal falls for hours at a time every day and the pity of it is that in many cases they are unnecessarily exposed to this danger. A simple precaution like hand-rail, an extra plank, packing in between job and sling, a better access, a safety belt, shoe or helmet would take the risk out of the job. This means hazards have been controlled and this is one of the best ways to prevent accident and hence, the injuries.

*(Contd.)*



Regular safety meetings held to review performance, discuss the effectiveness of safety programme and by inspection bring to light foggy areas, misunderstanding, omission, lack of attention to conditions that lead up to accidents.

In all the safety programmes use of safety appliances and more safety directions at supervisors, officers' level may be instituted but at no stage should the management leadership and participation be abdicated, otherwise desired result will not be achieved for accident prevention.

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## **Results of a Sound Effective Accident Prevention Programme at BARC**

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BARC is a multidisciplinary research organisation consisting of number of facilities at pilot plant scale, laboratories, workshops, etc. pursuing research and development work in nuclear technology. Health and safety problems in nuclear industry are mainly grouped into two categories viz radiological and conventional. Conventional safety problems are similar to the safety problems in any other industry. To obtain a high degree of safety in the organisation an Accident Prevention Programme was started at the early stages itself. Analysis of accidents over a period of last three decades explicitly shows the improvement which is a remarkable achievement by this programme. Last ten years data has been analysed for classification according to agencies causing these accidents, part of body affected, according to the personal factors contributing for the accidents and according to physical working conditions.

Under the Accident Prevention Programme, to promote industrial safety effective steps such as planning for health and safety at initial stages of facilities, incorporation of sound engineering control measures, administrative measures and its enforcement wherever engineering measures find inadequacy and elaborate training and motivation programmes for the staff are taken up.

Thus the efforts put by different agencies towards prevention of accidents under Accident Prevention Programme are mainly responsible to obtain a very low accident rate thereby enhancing the safety performance of the Centre.



# **Health and Safety Concepts and Practice Comparison Between Radiological and Conventional Hazards**

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Since its inception, nuclear industry is supported by meticulously framed, practised, and frequently updated radiological safety concepts and standards. In Bhabha Atomic Research Centre, conventional health and safety practice is being given equal footage alongwith radiological safety practice since the very beginning. As a result, conventional safety has grown in its stature alongwith radiological safety which is a unique feature of this Centre. The basic principles used in radiation protection, namely, justification of the operation, keeping the exposure as low as reasonably achievable and not allowing it to exceed the prescribed limits, are adopted in controlling hazards arising due to non-radiation operations as well.

Site Appraisal Committee concept as stipulated by the Factories Act 1948 (as amended in 1987) is in line with the site selection procedure that is being practised since early sixties in case of the Nuclear Power Plants. Most of the principles in planning, safe design, safety analysis, consequence modelling and in disaster management are common to both conventional safety and radiological safety. It is found that conventional safety and radiological safety are complementary to each other in several areas and some of the concepts can be interchangeably used to a significant advantage in the respective domains.

## **Respiratory Symptoms and Ventilatory Capacity in Metal Polishers**

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To evaluate the long-term effect of metal dusts on the bronchopulmonary system and the synergistic effect of cigarette smoke, a comparative study of spirometric measurements in 104 polishers and 90 unexposed controls was carried out in 25 brass and steelware polishing industries at Moradabad in Northern India. The two groups were comparable in terms of age, height, smoking habit and socio-economic status. A total of 58.6% of the polishers had one or more respiratory symptoms, compared to only 25.5% of the controls ( $P < 0.05$ ). Chronic cough was present in 21 polishers (20.2%) as compared to 11.1% of the controls. However, this difference was insignificant. Chronic phlegm was nearly three times as frequent amongh the polishers as amongh the controls (17.5% v/s 4.4%) ( $P < 0.005$ ). The prevalence of dyspnoea of varying grades was also significantly higher (16.3% as opposed to 4.4%) among the exposed groups. Chronic bronchitis (6.7%) and occupational asthma (4.8%) were found to be confined to polishers. The polishers also experienced acute respiratory symptoms during the work shift. The prevalence of acute respiratory symptoms was

*(Contd.)*



recorded for cough in 19 workers (44.1%) followed by dyspnoea in 14 workers (32.5%) and throat irritation in 11 workers (25.5%). Comparison of the mean values of pulmonary function parameters in the polishers and the controls showed significant differences in the smoking and non-smoking groups ( $P < 0.001$ ). The polishers exhibited significantly greater acute reductions in various lung functions over the work shift, particularly for forced expiratory flow over the 25-75% portion of the spirogram (FEF 25-75%), FEF25% and FEF50% than did the controls. Among the exposed group, the acute changes in lung function were found to be significantly larger in the smoking than in the non-smoking polishers. The duration of exposure showed a direct correlation with the acute fall in lung function. Polishers who were exposed to dusts of various metals for more than 10 years showed a significantly greater acute reduction in all the pulmonary functions ( $P < 0.001$ ) thereby indicating that occupational exposure to multimetals in the work environment of the polishing industry had deleterious respiratory effects.

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## **Cutaneous Manifestations among Exposed Workers to Metallic Dusts in Sintering Technology**

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The aim of this study was to evaluate the skin diseases among workers exposed to metallic dusts of Ag, Cd, Ni and Cu in a sintered products section.

The exposed workers (93 subjects) have undergone a questionnaire, with emphasis on the skin symptoms and their relation to the occupational exposure, occupational history, family and personal skin and allergic diseases. Each worker was dermatologically examined and 66 of them were tested for allergy; prick-tests to evaluate the presence of atopy and patch-tests for detecting the sensitivity to metals (Ni, Cu, Cr, Ag) were performed.

We have noticed in 48.3% of the examined workers dermatological manifestation, 26.8% being of allergic type. We have found a statistically significant difference regarding the length of exposure more than 5 years for the allergic skin diseases ( $X^2 = 5.50$ ,  $p < 0.02$ ). 17.6% of the tested subjects were atopics and only in a few cases patch-tests were found positive. It is of interest to mention that one case had a positive reaction to Ag.

The results of this study suggest that the exposure to metallic dusts of Ag, Cd, Cu, and Ni in sintering technology represents a risk for the allergic skin diseases. Other allergological and immunological tests are needed to confirm the occupational etiology of the allergic skin manifestations.



# **Working Risks in Sugar Industries**

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*Universidad Central Las Villas, Villa Clara, Cuba*

## **Objective of the investigation:**

To identify the main working risks which affect the workers in sugar industries.

## **Experimental methods employed:**

Experimental information which is obtained through inquiries and special techniques about the risks in the workplace and working conditions and their effects on the workers in the different areas of sugar industries.

There are some risks (physical, chemical and mechanical) in the production areas (damper, mill, fabrication, steam generation, electric plant, packing and handling). In spite of the fact that the workers are exposed to different risks, it is possible to refer some which are frequently detected such as noise due to gears. A group of recommendations have been proposed to correct these problems.

## **Conclusion :**

There are some risks which are frequently found in the different areas of sugar industry. The prevention and control programmes resulting from this investigation are useful in order to solve the problems which are detected. The active participation of workers in all these programmes is essential.

# **Drug Prescription Pattern among Doctors of a Public Sector Undertaking**

Mitra Kushal, Parihar Yogendra

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With the objective to find out the pattern of prescriptions of doctors, a retrospective study of prescriptions was undertaken, in Northern Coalfields Limited, a Public Sector Undertaking.

Random sampling of prescriptions of patients attending Out Patients Department as well as from Indoor bed head tickets was done. In all the selected samples, allopathic doctors' prescriptions including general physicians' and specialists' were taken into account.

On the whole, 1874 prescriptions of 424 patients for 484 episodes were examined for the study. Over a period of 10486 days, 65002 doses of 3428 drugs were prescribed to the understudy population. For every patient, on an average, the number of drugs was 8.20 whereas for every prescription, number of drugs was 1.85 that is slightly higher than the observation made in another study (Mitra J et al) for private practitioners.

The study points out that the prescription of drugs not only depends upon the type and severity of, illness and age of the patient, but also, to some extent on the skill and social position of the doctor and above all, on availability of drugs.

The study also underlines the benefit of regular prescription as well as indicates to prepare an updated standard list of essentially required drugs, keeping a strict vigilance to ensure that health care system does not get exploited by the doctor-drug-producer axis and the abundance of drugs does not become a vested interest in ill health.



# "Ergonomics" - In Backache Prevention

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Backache is one of the major morbidity factors that contributes to high absenteeism and premature disability in any industry. In spite of its high prevalence and cause for huge financial losses to the industries, no major preventive campaign has been launched to fight this menace probably because, it is not a life-threatening ailment.

The paper demonstrates importance of application of ergonomic principles in manual material handling in prevention of backache. Due to the high prevalence of backache in the Zirconium Oxide Plant at the Nuclear Fuel Complex, ergonomic studies were conducted in 1980 and recommendations were implemented. The paper reviews retrospective case history data of backache cases for the last 25 years (1971 to 1995) in ZOP. Analysis of pre and post-study data shows a significant reduction in the incidence of backache cases in post study era. This establishes the values of ergonomics in prevention of backache.

It is therefore recommended that all concerned and particularly, Occupational Health Practitioners should use Ergonomics as a tool for the prevention of backache.

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## Comparing Health status of Delhi Fire Service (DFS) Workers and Village Population

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**Objective** of the study was to compare the health status of Delhi Fire Service Workers and village population.

**Methods :** The design of the study was a comparative population study. A sample of 112 Delhi Fire Service (DFS) workers and 160 villagers from three urban villages were chosen. Each subject was interviewed, and a health assessment was undertaken which included PEFR measurements.

**Results :** Delhi Fire Service workers were significantly more exposed to vehicular pollution besides the pollution at work due to the nature of their jobs in comparison to the villagers ( $p < 0.00001$ ). Battery of symptomatology on the day of survey was significantly more in DFS workers even after controlling for age ( $p < 0.0001$ ). Their Body Mass Index was significantly higher than the villagers ( $0.0001$ ). Although average systolic and diastolic blood pressure was significantly higher in DFS workers, but when the subjects above 40 years were analysed, diastolic blood pressure was significantly higher in DFS workers ( $p=0.05$ ). Heart disease was common in DFS workers, which could be due to their chronic long term exposure to carbon monoxide. Asthma was significantly more among villagers. There was no significant difference in the use of tobacco and alcohol in two groups.

**Conclusion :** Significantly more disease symptomatology in DFS workers on the day of the survey could be due to higher exposure to pollution, whereas higher diastolic blood pressure measurements in DFS workers may be due to their higher Body Mass Index. The study concluded that DFS workers have high risk of diastolic blood pressure, cardiovascular morbidity, and disease symptomatology. They may be protected by a well designed occupational health programme which at present does not exist.



# Action Oriented Pilot Research Study Aimed at Developing a Model Strategy to Provide Occupational and General Health Services to Stone Crushers and Cutters Employed in Unorganised Sector of the Industry

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General working conditions in small scale industries tend to be more hazardous than those in large establishments. Health problems of workers in unorganised small units like stone crushers and cutters are quite alarming because even minimum basic necessities of life are not available. Lokmanya Medical Research Centre is a progressive voluntary organisation in Pune which has evolved a methodology for diagnosis and early detection of existing health problems of stone crushers and cutters. The workers have also been provided with comprehensive general and occupational health services.

About 540 stone crushers were studied. The general morbidity and work related morbidity was studied. The health services were provided through mobile ambulatory services coupled with health educational campaigns which were found to be cost-effective as well.

## Health profile of Various Categories of Male Workers in Delhi

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**Objective** of the study was to have a baseline survey of different categories of male workers in Delhi. The design was a population baseline study. A sample of 744 male workers from various areas was chosen by the area sampling. They were grouped according to their occupational categories. Each subject was interviewed and health status was assessed including determination of PEFR.

**Results :** There were statistically significant differences in age ( $F=10.24$ ,  $p=0.0004$ ), Body Mass Index (BMI,  $F=6.34$ ,  $p=0.0001$ ), systolic ( $F=17.25$ ,  $p=0.0001$ ) and diastolic ( $F=9.42$ ,  $p=0.05$ ) blood pressure (SBP, DBP), and Peak Expiratory Flow Rate (PEFR,  $F=6.34$ ,  $p=0.0001$ ) of different categories of workers. Unskilled and skilled workers ( $3.75 \pm 4.84$  and  $4.65 \pm 5.95$ ) had more symptoms of respiratory, and neuropsychiatric disorders on the day of the survey as compared to businessmen ( $1.59 \pm 3.07$ ) and professionals ( $1.83 \pm 2.52$ ). Prevalence of chronic illness, i.e., asthma (4.00%, 3.04%), heart disease (3.43%, 7.69%) and diabetes (1.14%, 7.69%) in businessmen and professionals was higher than other categories of workers. Current tobacco, alcohol use and non-vegetarian diet was more prevalent in unskilled (41.61, 36.02%, 61.09%), semiskilled (42.57%, 37.62%, 64.34%) and skilled (44.75%, 36.96%, 61.09%), workers. For the common illness, professional class preferred to go to a specialist (35.71%) and had relatively more faith in Ayurvedic system of medicine (32.14%) than other categories. Total exposure to vehicular pollution was more in semiskilled and skilled workers than others.

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**Conclusion :** High prevalence of chronic illness in business and professional class may be due to their higher age, BMI, and socio-economic status. Similarly, consulting specialists and faith in Ayurvedic system of medicine may be due to their socio-economic status. Poor BMI and higher respiratory symptomatology in unskilled and semiskilled workers may be attributed to their poor socio-economic status, habit of tobacco and alcohol use. Behaviour modification programmes regarding their tobacco, alcohol use in unskilled and semiskilled workers and regular check-ups of blood pressure in businessmen and professionals and maintaining normal BMI in all category of workers are recommended.

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## **Examination of Welders' Health Condition**

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*Military Medical Academy, Belgrade, Yugoslavia*

**Aim :** This project is testing of welders' health condition and discovering whether harmful elements within the working environment, influence their health condition or not.

**Method :** Our testing project covered a welders group (E) of 33 men. The control group (C) that consists of the same number of tested persons is made of labourers working in other departments not exposed to harmful elements influence as the welders.

**Results :** The results of the complete biochemical and haematological analysis for both the groups of labourers were normal. There was no statistically important difference with respect to morbidity structure between E and C groups, besides the statistically very important difference ( $p < 0.001$ ) with respect to dermatological changes. The group E had expressively greater number of hyperpigmentation, telangiectases and pityriasis versicolor.

**Conclusion :** Such results of dermatological check up can be explained by the prolonged exposure to UV and IR radiation and perspiration of welders.

## **A Study on Decompression Sickness among the Workers Engaged in Tunnel Construction (Under Hyperbaric Condition) in Metro Railway Calcutta**

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### **Aims and Objective of the Study :**

- To find out the rate of decompression sickness among the workers exposed to guage pressure upto 1 kg/CM<sup>2</sup>.
- To correlate various factors particularly in connection to decompression sickness.
- To find out any bone changes following exposure to hyperbaric conditions.

### **Methodology :**

- Review of case history sheets of treated cases of acute decompression sickness.

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- b. Clinical examination of 50 persons of various categories having different duration of exposure.
- c. Radiological Examination.

**Results :** Cases of acute decompression sickness during the construction of metro tunnel. 95 cases (85.6%) occurred when the working bottom pressure was 1.0 Kg.Cm<sup>2</sup>. 67 cases (60.36%) were of Type II. Incidence of bends below 0.117%. 55 cases (50.01%) cases had headache while presenting with acute decompression sickness. There were no fatal cases following acute decompression sickness during the metro tunnel construction.

Radiological investigation was carried out for two persons. One of the subjects a Junior Engineer, aged 31 years having an exposure to compressed air for more than 6 years, with a past history of Type II decompression sickness had BILATERAL SUBARTICULAR SCLEROSIS ON THE TIBIAL SIDE OF BOTH THE KNEE JOINTS.

**Recommendation :**

1. Preplacement examination should be done properly including all biochemical and radiological examination of chest, hip, shoulder, and knee joints.
2. Periodical check up with X-ray at minimum intervals of 6 months during his employment in compressed air, and when possible, at intervals of 12 & 24 months after his last exposure to compressed air.
3. Maintenance of man-lock register, case history sheet.
4. Training of workers.
5. Reduce working hours upto a maximum of 4 hours in a shift.

## **Workers' Health Programme - a Global Strategy for Assessment of Occupational Health Risk Factors in Employees at DRDO Establishments in India**

Bhutada SS

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Worker's Health Programme is the WHO's new Global Strategy after recognition of the essence of improvement of working condition as an important factor of Health Protection and Health Promotion. About 157 million new cases of occupational illness are attributed to hazardous exposure, 100 million get injured and 2,00,000 die each year from occupational accidents. This causes tremendous economic losses to the extent of 10-25% in Gross National Product and is of a great concern especially to developing countries of the world.

Updated self-sufficient defence system is of prime importance to every nation. Thus, the working force in defence organisation should be efficient, healthy and productive.

3000 selected workers aged above 40 year, from one of largest 'Defence Research and Development Organisation' - DRDO establishment of India at Pune, Maharashtra were medically examined and extensively investigated in detail for detecting prevalence of occupational hazards, diseases and disabilities. These employees were exposed to one or more occupational health risk factors like

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chemicals, dust, noise, radiation, and stresses due to physical, mental and cold environment etc. at work site.

Data from detailed medical check-up of 3,000 employees were collected and analysed to detect the prevalence rate of occupational health hazards and diseases like deafness, dermatitis, diabetes and cardiovascular diseases etc.

Work sites in the establishment were also visited for assessing the status of various pollutants by Air, Water, Noise Monitoring.

Establishment of 'Cause and Effect' relationship was attempted and recommendations were concluded for protection of workers and prevention of occupational health problems due to work site risk factors to achieve an efficient work force.

## **Health Status of National Coalfields Limited Employees - A Periodic Medical Examination Study**

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Retrospective study of health status of executives and non-executives through Periodic Medical Examination has been reviewed, with the aim to evaluate the health status of executives. Data for the period extending 1992-1996 were analysed. Disease prevalence and its relation to age, length of service and type of work was studied. Personal habits, risk factors, environmental conditions were considered and remedial measures suggested.

Total, 1083 executives were examined, 50% belonging to (40-49) years of age and 692 (63.8%) were found to suffer from one disease or the other. Hypertension (14%) Diabetes Mellitus (12.7%) hypercholesterolemia (7.4%), Smokers (8.7%), Obesity (3.9%), TMT abnormality and alcoholism (7.3%) accounted for all the known coronary risk factors. Hypertension 14% accounted for maximum no. of morbidity statistics and psychiatric illness 0.96% accounted for lowest. TB & bronchial asthma accounted for 5.2% of the total number.

A total no. of 9038 (non executives) were examined from January 95 - June 97. Of them 1310 (14.4%) suffered from one disease or the other Hypertension was found in only 4.1% and diabetes in 1.3%. This was much less than the prevalence seen in executives. Diseases like TB, b. asthma, eye defects were found more in non-executives as compared to executives.

It is concluded that the coronary risk factors are more prevalent in executives as compared to non-executives; which could be due to various factors like mental stress at work, dietary pattern, sedentary life style, age group studied etc. This requires further study.

# Spinal Cord Injury Caused by Industrial Accidents in Japan

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**Objectives :** Industrial accidents in Japan have been decreasing in recent years. However, the actual condition of traumatic spinal cord injury has not been clarified. This study was conducted to find the reasons related to the incidence of spinal cord injury caused by industrial accidents.

**Methods :** This study included 1978 patients with traumatic spinal cord injury (SCI) caused by industrial accidents, who were receiving injury and disease pension of compensation pensions acknowledged since 1981. The incidence of SCI caused by industrial accidents were analyzed based upon age at traumatization, the site of the trauma, cause of injury, etc.

**Results :** The percentage of SCI caused by industrial accidents showed a decreasing tendency. It was considered to be mainly based on the alterations of industrial structures in Japan. Nowadays, increases in incidence of cervical cord injuries have turned to be a problem.

**Conclusion :** The rate of patients with injury in the cervical areas has been increasing, in which complications and social rehabilitation, etc. are demonstrated as important issues among these patients. Prevention and education for safety are considered to be necessary.

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## Study of Respiratory Morbidity Amongst Residents of Atomic Power Station Colony, Tarapur and a Village Population

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Study was carried out from July to December '91, to study the respiratory morbidity among residents of Atomic Power Station Colony and to compare it with a village group. It was a cross-sectional study. 2560 residents of Atomic Power Station Colony, Tarapur which was comprised of 580 workers of atomic power station and their 1980 family members and 1050 residents of village Asangaon were studied.

Proforma for the study was prepared with the idea to get the following information :

- |                           |   |
|---------------------------|---|
| - General Information     | - Family History                                |
| - Occupational History    | - Hereditary History                            |
| - Socio-Economic standard | - Clinical Examination                          |
| - Past History            | - Laboratory Tests, X-ray chest in needed cases |
| - Present History         | - Detection of PEF                              |

In the colony group, higher prevalence of URTI, Bronchial asthma, Pulmonary eosinophilia and Pulmonary Tuberculosis were observed in comparison to the village group. In the village group prevalence of bronchitis was more in comparison to colony group but difference was not significant statistically.



# **Mutagenic Response of Smoke Particulates of Biomass Energy Fuels**

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Indoor air quality is a matter of growing concern in environmental and occupational health. Biomass energy fuels like wood, animal dung and agricultural waste are still major sources of cooking energy for poor families of urban and rural population of developing countries. The cancer risk from product of incomplete combustions (PICs) are thought to arise primarily from polycyclic organic matter (POM) associated with carbonaceous particles of components of PICs. Application of microbial assays for detection of human mutagens and carcinogens continues to play significant role in genotoxic monitoring of complex environmental and biological samples. Ames Salmonella/microsome assay is the single most widely used bacterial assay and many researchers have applied this assay to demonstrate the ambient mutagenic and carcinogenic compounds in the extractable organic matter from the airborne particulates.

In the present study smoke particulates of wood and cattle dung were collected from the traditional chulha housed in a simulated kitchen. Organic residues of smoke particulates of both the fuels showed mutagenic response. Direct and indirect acting frameshift mutagens have been found to be present in particulates of both the fuels. This study explains the usefulness of Ames assay for monitoring mutagenic compounds from airborne particulates of indoor air.

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## **Is Diabetes a Taboo for Employment?**

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Diabetes is a metabolic cum vascular disease with a tendency for genetic inheritance and environmental expression.

Its prevalence is on the increase the world-over. What was 2% in our country two decades ago has now come to about 8% in the general population. This alarming increase has to be contained. Insulin and oral drugs have made the life of a controlled diabetic safe, secure and long.

Time was there when diabetes was considered a disqualification for job and employment both by the Government and private undertakings. The untiring efforts of the medical profession in understanding the disease have made it now possible to live almost a normal span by a diabetic.

The WHO Expert Committee on Diabetes in 1965 opined - "a diabetic should have the same chance as any other person of obtaining and performing work for which he is medically and vocationally fit and suitable".

A good percentage of diabetics are usefully employed today in foreign countries. In India and other developing countries there has been some hesitation as to their fitness. This looks unfounded. With better facilities and legal protection for occupational health at national level and the helping tendency of the employer, diabetics need not be a bar for job.

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Our Observation : In 1980 we screened a large number of workers from 2 factories in North Madras and found 4% to have diabetes - some of them detected first time. Absenteeism was common among them. Advice, encouragement and proper management made them regular, thankful and productive. They went through their full span of service and retired.

The nature of work should be decided by the Factory Medical Officer in consultation with a Diabetologist.

We, therefore, conclude that diabetes is no more a taboo for employment.

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## **Morbidity Profile of Workers in a Sugar Factory**

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### **Introduction :**

Sugar industry has increased twelve-fold in the last four decades. Till now very little work has been done regarding the health profile of the workers in sugar factories. Hence present study was conducted in a sugar factory from Western Maharashtra to map out the magnitude and nature of different work - related health problems.

### **Aims & Objectives :**

- 1) To identify the magnitude and nature of work-related health problems in a sugar factory.
- 2) To determine the respiratory efficiency.
- 3) To study the role of different factors such as smoking, alcohol, shiftwork etc.
- 4) To impart health education to workers and management.

### **Methodology :**

*Cross sectional study by :*

- a) Personal interviews b) Clinical examination c) Laboratory Investigations

### **Results / Conclusions :**

Smoking and alcoholism were the other predominant factors.

Health education was imparted to the workers and management. Broad guidelines for the improvement of work environment were suggested to the management.



# Cotton Dust Exposure and Health Status of Indian Ginning Workers

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An epidemiological study was carried out in four roller gins of Gujarat State, India. The study included history of work-related complaints, smoking habits, clinical examination of respiratory system and pulmonary function tests. The cotton dust (dust less fly) levels were measured by cone samplers in different sections of gins.

A total of 289 gin workers (60% females and 40% males) were examined in this study. Out of 289 workers, 201 workers were examined for pulmonary function tests on the first day of the week after a weekend break.

The results of this study show :

- 1) Work related complaints (dry cough, chest tightness, breathlessness and burning of eyes) in 39.1% of gin workers.
- 2) The cotton dust levels are higher than the TLV suggested by British Occupational Hygiene Society, 1972.
- 3) The acute changes in pulmonary functions are observed only in the female group of gins processing short-staple cotton.
- 4) This cross-sectional study does not reveal any chronic respiratory disease among gin workers. This observation differs from the studies of textile workers who develop byssinosis after some years of exposure. The difference in health effects in ginning and textile industry can be explained by the limited seasonal exposure and high labour turnover of workers in the ginning industry.

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## Occupational Health and Safety Profile of a Flour Mill in Jakarta

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Occupational health and safety of workers in large industries is important for the performance of the industry and productivity of workers. A large flour mill in Jakarta was selected to assess the occupational health and safety profile of such industries. The instrument used was a questionnaire adopted from the ILO/RI Ministry of Health standard questionnaires which focused on health and safety hazards, and ergonomics at the work place. The surveyors did on-site observation of all facilities in the factory. 1425 male and 160 female workiers were employed in the factory. The main flour mill product was wheat flour and pasta. The production unit had 3 work shifts. Social and health coverage for workers were provided by the private sector. Sanitation, health and safety facilities were available in the factory. Lighting was adequate in the factory, except in the pasta packing unit. Noise, dust and vibration were potential hazards in the drilling unit. The workers rarely

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used personal protective equipment. There was a high prevalence of respiratory disease among workers. Most employees adopted non-ergonomic posture during work at the packing unit. This increased complaints of low back pain and varicose veins. Work accidents frequently occurred at the workshop, but not at the drilling unit. Indiscriminate positioning of materials was observed at the workshop. Finally, we recommend health promotion and the use of protective equipment for disease prevention. Facilities should fulfill ergonomic criteria especially at the packing unit. Workshop should be cleaned and maintained regularly.

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## **Occupational Safety and Health Standard at Work in the Tanning Industry in South East Asia**

Hannak Jurger, Jayaraj G

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The tanning industry, a sector with old roots and long tradition in most countries of South East Asia, plays an important role in the countries' economy, both in terms of employment and export revenues. Except for some minor changes in process technology and up-gradation of production facilities, the ways and methods applied by the tanneries have not changed significantly over the last decades. Unfortunately, this also applies to the prevailing work practices and pollution abatement measures.

The United Nations Industrial Development Organisation (UNIDO) has been for some years working on an integrated programme for pollution control in the tanning industry in South East Asia, helping the industry to continue its growth and to maintain its competitiveness without doing harmful impact on environment and human beings. The chosen integrated approach implies a careful balancing of measures aiming at simultaneously increasing productivity, improving environmental performance and making tanneries a better place to work.

The basic principle in promoting better OSH practices at work lies on "know-how through show-how". Open-minded tanners, with assistance from UNIDO and national counterparts convert their factories into model and demonstration sites. With respect to OSH, this implies up-gradation of prevailing standards in terms of machine safety, safety in use of chemicals at work, workplace ecology, precautionary and emergency preparedness and work place and health monitoring practices.

The above programme, currently under implementation in eight South Asian countries, comprise following activities under the OSH component.

1. OSH audits in selected tanneries and effluent treatment plants in the participating countries in South East Asia, using multi-disciplinary team approach - status: completed.
2. On-site improvement and demonstration of proper safety practices - status : ongoing.
3. Training programme for employers/supervisors, workers and representatives from enforcement agencies - status : tannery specific OSH manual under preparation.
4. Promotion and awareness raising with the help of tanners' associations and other counterparts - status: on-going.

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In India, the tanning industry, looking back at a nearly 200 year old history, has experienced tremendous growth during the last 10 to 20 years. In fact, this sector together with the leather conversion industry, is at present the fourth largest export revenue earner of India. While the leather conversion sector predominantly follows modern production management principles, the tanning sector has by and large stuck to its traditional ways of leather production. 80% of about 3,000 tanneries in India fall under the category cottage and small-scale enterprises. Poor prevailing OSH standards, particularly manifested by lack of active and passive machine guards, inadequate chemical handling, storage and disposal practices, lack of awareness and knowledge about hazards by both employers and workers, poor work place ecology, lack of preparedness for medical, fire and chemical emergencies as well as absence of adequate health examination and record practices at work, are widely present in most small-scale tanneries.

The paper will present the experience gained so far with the "show-how" approach in the tanning sector in South East Asia and explains the practicability of the strategy evolved around a combination of innovative OSH auditing, dissemination and training based on demonstration sites, involving a multi-disciplinary approach of medical, engineering, safety, environmental, tanning disciplines.

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## **Work and Depression : A Study of Nurses in Trinidad**

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The purpose of the study is to investigate the impact of work factors on depression and verify the portability of Western models to the developing world. A model linking Role factors, Work attitudes, Working conditions, and Work outcomes to depression was proposed. Data was collected from 239 nurses from different hospitals in Trinidad using a field survey questionnaire. The response rate was 51%. The variables were measured using established instrument with demonstrated psychometric properties. A stepwise multiple regression was used to test the model. The results indicated that job capacity, job characteristics, job involvement, stress, and burnout were significant predictors of depression explaining about 38% of the variance on depression. Implications of the findings for job redesign, stress management, and further research on occupational mental health in the developing world are discussed.

# **Clinical Diagnosis Versus Results of Biological Estimation in Respect Of Inorganic Lead Intoxication Among Exposed Workers : Findings of Periodical Medical Examination Between 1989 -97.**

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Even today diagnosis of lead poisoning remains controversial with no clear cut definition that would satisfy all. However, it is usually defined as a clinical disease in which subjective symptoms and objective signs of lead intoxication occur in combination with abnormal laboratory test i.e. results of biological estimation. Again, it was frequently found that although there were convincing signs and symptoms of classical lead intoxication, there were non-significant figures of biological estimation and vice-versa. To arrive at a clinical diagnosis the authors put forward a computation to quantify signs and symptoms after carrying out periodical medical examination of around 2000 workers of various lead industries during the period 1989-97. The medical examinations, individual examination proforma, were based on proper occupational history, correct length of exposure, chief complaints and elicitation of relevant signs in respect of lead intoxication.

Results of medical examinations were plotted according to elicited signs and symptoms against results of biological estimation of the individual workers. Individual case diagnosis of lead poisoning was based on clinical evaluation and biological figures were then tallied. It showed clinical evaluation of lead poisoning in most cases did not tally with the figures of biological estimation and vice-versa, except in fresh and extensively progressed cases. Thereafter, diagnosis of lead poisoning (on classical clinical signs and symptoms) was then tried to quantify using simple numericals.

Entire endeavour suggested that lead poisoning is a disease of clinical entity and the diagnosis for medical purposes (including treatment) should mainly be based on clinical occupational medicine.



# **Child Labour in India - Problems & Solutions**

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Children are a "Supremely Important National Asset" and the future of the nation depends on how its children grow and develop. According to New Encyclopaedia Britannica, Child Labour means the employment of children under a specified legal age.

According to the findings of Asian Labour Monitor, every third household in India has a working child. Every fourth child in the age group of 5-15 years is employed. Child labour contributes to 20% of India's GNP. The invisibility of child labour makes an estimate far from the actual.

The main pockets of child labour concentration in India are bidi manufacturing centres, lock making units, carpet weaving centres, match industry, diamond polishing industry, stone polishing industry, glass industry, brassware industry, slate industry and almost all the tribal areas. Added to this are unspecified number of children employed as domestic servants, hotel boys, agricultural labourers, construction labourers. The worst abuse of child labour is in the hazardous work, bonded child labour, forced child labour, employment of children below 13 years of age, girl children and street children. The child has to pay physiological, biological, psychological and economic cost for his labour at an individual level depending on the occupation.

In view of the root causes & working conditions of child labour, this problem should be combated by new and practical approach instead of traditional approach of emphasising only on legislation and their enforcement. This comprehensive and pragmatic new approach for benefitting child labour demands focuses on our General Development Programmes already existing with very wide national coverage in such areas as Poverty group of programmes, Education (Formal & Nonformal), Health, Nutrition & Integrated child development programme. Thus, a joint battle by government, workers, employers, voluntary organizations, trade unions, educators, parents and children against child labour is essential.

In addition to this under provision of National Policy On Child Labour (1987), project based plan of action programmes has been taken up by the government to combat child labour abuse in ten areas of child labour concentration in a phased manner since 1992. Few voluntary organizations, with financial assistance from Central Government have successfully taken up action oriented projects for child labour, for example Jaya Rajendra Rag Pickers Project, Bangalore.

The International Programme on Elimination of Child Labour "IPEC" is a major programme of ILO combating the evil of child labour since 1990. IPEC was formally launched in India on January 20, 1993. The National Authority for Elimination of Child Labour was set up on October 1, 1994 for progressive time bound elimination of child labour in 10 States/Union Territories with a markedly low incidence of child labour.

The ultimate objective of this battle against child labour is to replace these "VOICELESS NON-BEINGS" in any employment by adult workers.



# **Implementation of the Pre-employment and Periodic Medical Examination (PME) of Persons Employed in Mines**

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The DGMS (Directorate General of Mines Safety), Ministry of Labour, Govt. of India, configures the whole spectrum of Occupational Safety and Health activities which need to be pursued, practised and promulgated in all Mining organisations in India, irrespective of their stature, organisational philosophy and policies. In this direction the DGMS has created well laid-down policies, programmes which stem from the mission of ensuring occupational safety and health to the mining workers. Recommendations of the VIII Conference of DGMS is particularly significant in that it distinctly clarifies the major component of medical examination of persons employed in mines.

Part A : Medical Surveillance has been made mandatory under which the owner, agent or manager of every mine shall make arrangements of the (i) initial medical examination of every persons to be employed in mines and also (ii) periodic medical examination once in five years.

Part B : Occupational health hazards due to respirable dust

Part C : Occupational health hazards due to noise

The Recommendations specifies the OHS functions namely (i) Identification and assessment of the risk at the work place (ii) Surveillance of the factors in working environment and work practices which may affect workers' health, specifying various control measures necessary for keeping the levels/values within permissible limits (iii) Surveillance of workers' health relating it to work (iv) Health education of the workers (v) Developing health information system (vi) Organisation of first-aid services including training and retraining of the first-aiders (Preparation of report of medical examination, notifiable diseases, airborne dust, noise, temperature, sanitation at work places, (vi) Maintenance of report (medical record system) of each worker.

Having successfully implemented the recommendations of the VIII Conference for over 15 years through three cycles of five yearly periodic medical examinations in the Asia's biggest open-cast mining industry, the author shares his experiences as the PME Coordinator to interact with the employer, employees, trade unions, enforcing agencies and the team leadership in the activities of Health surveillance programme of large group of mine employees numbering over 10,000. These hard earned experiences need to be emulated by all industries for successful organisation of OHS.



# Relevance of Colour Vision for Jobs

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**Is the subjects colour vision defective? Is the defect acquired or congenital? What is the nature of defect? Has it any occupational relevance?**

These questions are raised by the employers and religiously implemented by the company doctors without questioning the conventionally laid medical fitness rules by the company. The company medical officers fail to advise the management on the relevance of the colour vision defects for the jobs. Often major mistakes are made in disqualifying very skilled persons without going into the job content of the persons recruited. This paper is the essence of the long experience of the author serving as a medical adviser for a major PSU in India employing over 25,000 work-force.

In considering colour vision it is important to remember, that there is uncertainty in understanding of colour vision including the validity of some of the basic laws of colour mixtures, and also, there is no accepted consensus of opinion on the relationships of defects of colour visions to most occupations. eg. For driving on the roads investigations have failed to show any significant correlation between defective colour vision and road accidents. Majority of our drivers who have colour vision defects are able to distinguish traffic lights by the different light intensities and by the position of the light on the column. However, this is not applicable to drivers on the dark highways where appreciation of a single road warning light may be important, as it is on the railways.

8 percent of the male population and 0.5 percent of females suffer from congenital defects of colour vision. Of colour defects red-green is the commonest, caused by a totally sex-linked incompletely recessive gene. Blue-yellow defect has no genetic origin. Acquired defect of colour vision is commonly caused by aging. From the age of 6 to 25 colour vision improves and thereafter declines particularly, at ages over 60. Congenital causes of complete colour blindness are due to rod monochromatism, generally a recessive condition or cone monochromatism, a rare condition, with no genetic origin. Of colour defects, red-green (Protans and Deutans) is the commonest, caused by a totally sex-linked incompletely recessive gene. Blue-yellow (Tritans) defect has no genetic origin. Acquired defect is commonly caused by ageing. Colour vision defects may be thought of as deficiency in a particular pigment in the cone receptors of the retina. Protans lack red pigment and have difficulty in perceiving the red end of the spectrum. Deutans lack green pigment and have difficulty in perceiving the green end of the spectrum. Tritans lack blue pigment and have difficulty in perceiving the red end of spectrum. Severe defects are classified as protanopia, deuteranopia, or tritanopia. Less severe defects are termed as protanomalopia, deuteranomalopia and tritanomalopia respectively. Amisochromatopes have defective colour vision in one eye only.

It is possible to suggest on theoretical grounds that in any occupation in which colour discrimination is required colour vision should be normal, but experience shows this is not necessarily correct as, for example, a proportion of the medical profession who are colour vision defective have worked in physical, chemical and pathological laboratories successfully, yet defective colour vision has not been found to be a practical problem.









